

U.S. Coast Guard Oceanographic Report

UNITED STATES COAST GUARD  
**OCEANOGRAPHIC**  
**REPORT No.31**

Woods Hole Oceanographic Institution  
ATLAS - GAZETTEER COLLECTION

CG 373-31

PLEASE RETURN  
TO  
INSTITUTION DATA LIBRARY  
**McLEAN**

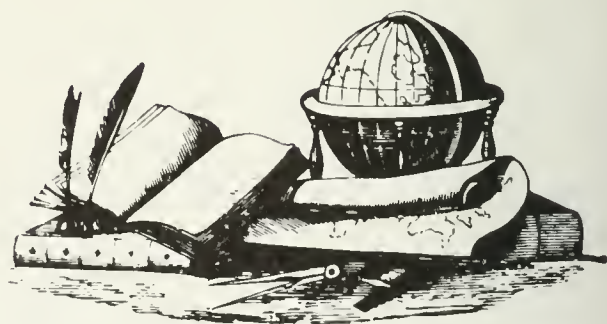
**OCEANOGRAPHY OF THE  
WEDDELL SEA (IWSOE)**

February-March 1969



GC  
3  
.U7  
A3  
110.31

UNITED STATES COAST GUARD  
OCEANOGRAPHIC



UNITED STATES COAST GUARD OCEANOGRAPHIC UNIT

# REPORT No. 31 CG 373-31

## OCEANOGRAPHY OF THE WEDDELL SEA IN 1969 (IWSOE)

*Gary L. Hufford*

*and*

*Lcdr. James M. Seabrooke*



WASHINGTON, D.C. ⚓ FEBRUARY 1970



## **Abstract**

This report discusses the physical oceanography of the Weddell Sea during the austral summer of 1969. The work was done on the icebreaker USCGC GLACIER (WAGB-4) as part of the second phase of the International Weddell Sea Oceanographic Expedition. Temperature, salinity, and oxygen measurements were obtained from a salinity-temperature-depth recorder and from Nansen bottles.



# CONTENTS

	Page
Oceanography of the Weddell Sea in 1969 (IWSOE) .....	1
Introduction .....	1
IWSOE '69 Programs .....	1
University of Bergen .....	1
University of Minnesota .....	1
University of California, Los Angeles .....	1
U.S. Coast Guard Oceanographic Unit .....	2
Station Procedure .....	2
Data Acquisition and Initial Analysis .....	2
Temperature Data .....	2
Salinity Determination .....	3
Oxygen and pH .....	3
Nutrient Analysis .....	3
Salinity-Temperature-Depth System .....	3
Bottom Photography .....	4
Results of Analysis .....	4
Bibliography .....	5
Illustrations .....	6
Explanation of Oceanographic Station Data .....	
Table of Oceanographic Data (IWSOE '69) .....	

## Illustrations

Figure	
Frontispiece: USCGC GLACIER (WAGB-4) .....	ii
1. Hydrographic Station Locations .....	6
2. Vertical Distribution of Temperature (°C) During IWSOE 69 .....	7
3. Vertical Distribution of Salinity (‰) During IWSOE 69 .....	7
4. Vertical Distribution of Dissolved Oxygen (ml/L) During IWSOE 69 .....	8
5. Vertical Distribution of Preformed Phosphate ( $\mu\text{g-at/l}$ ) During IWSOE 69 .....	8
6. Vertical Distribution of Preformed Nitrate ( $\mu\text{g-at/l}$ ) During IWSOE 69 .....	9

## TABLE

I. Summary of the Data Collected at each Station .....	3
II. Mean Characteristics of Water Masses Present in Weddell Sea in 1969 .....	4
III. Table of Oceanographic Data (IWSOE 69) .....	10





# OCEANOGRAPHY OF THE WEDDELL SEA (1969—IWSOE)

## Introduction

Deacon (1963) indicated that the Weddell Sea is the largest source of Antarctic Bottom Water ( $-0.4^{\circ}\text{C}$ ., 34.66%). The generally accepted theory states that it is a mixture of warm deep water and water formed on the Antarctic continental shelf. The shelf water gets its particular properties by convection due to cooling and ice formation during the winter. Owing to the nonlinear dependency of density of seawater on temperature and salinity, the processes determining the formation of Antarctic Bottom Water are hampered or even prevented until a certain stage has been reached. The formation of Bottom Water may, therefore, appear as a sudden flow, with a perceptible current speed (Fofonoff, 1956).

In the summer of 1968, the icebreaker USCGC GLACIER (WAGB-4), modified for oceanographic research, became available for the International Weddell Sea Oceanographic Expedition (IWSOE) under the coordination of the National Science Foundation. The major purpose of the expedition was to study the formation of Antarctic Bottom Water. From the data of IWSOE '68, Elder and Seabrooke (in press) proposed a theory for the formation of Antarctic Bottom Water in the summer. They found the shelf water below 200 meters in the southwest Weddell Sea to be sufficiently dense to flow down the slope and mix with the warm deep layer and form Antarctic Bottom Water. Analysis of the data indicated that the dense shelf water did not form at the air-sea interface nor was it transported in from other areas. Bathymetric data indicate it was not water formed in the winter, trapped on the shelf, and prevented from flowing off the shelf. They concluded that the dense water was formed on the continental shelf by contact with the underside of the Filchner and Ronne Ice shelves.

The IWSOE '69 is the second phase of the oceanographic program carried out in the Weddell Sea and is a direct continuation of IWSOE '68. The USCGC GLACIER, Captain E. C. McCorry, USCG, commanding, was assigned for the cruise. In addition to the already existing oceanographic facilities, a new level luffing crane with a trawl winch was installed to give piston coring and heavier dredging capabilities to the ship.

## IWSOE '69 Programs

A number of institutions took part in the expedition conducting the following programs:

*University of Bergen:* To evaluate the theories of the formation of Antarctic Bottom Water, Dr. Thor Kvinge of the University of Bergen installed four current meter buoy arrays on the continental shelf near  $74^{\circ}\text{S}$ .,  $40^{\circ}\text{W}$ . during IWSOE '68 to measure currents and temperature throughout the winter. One of the primary objectives of IWSOE'69 was to recover the current meters.

*The University of Connecticut:* Dr. John S. Rankin of the University of Connecticut studied the population density and diversity of the deep sea benthos of the Weddell Sea using an anchor dredge and an epibenthic sled.

*The University of Minnesota:* A program to study the population dynamics of Antarctic seals was conducted by Dr. Albert W. Erickson of the Bell Museum of Natural History, University of Minnesota. The seal census was conducted from the air by helicopter as well as from the ship. Specimens were also captured and blood samples taken for studies of phylogenetic and population of relationships.

*The University of California, Los Angeles:* Sedimentation processes operating in the Weddell Sea were studied by Richard D. LeFever of the Department of Geology, University of California, Los Angeles. A modified Ewing pis-

ton corer 20 feet in length was utilized to obtain sedimentary material. The cores were returned to the United States where they will be exposed to X-rays to determine the types and extent of sedimentary structures which are not otherwise visible. In addition, chemical analyses will be made on the sediments to determine carbonate or sulfate concentrations and source rock composition.

*The U.S. Coast Guard Oceanographic Unit:* The program conducted by the U.S. Coast Guard Oceanographic Unit consisted of physical oceanographic measurements, determinations of dissolved oxygen, pH, and nutrients, and bottom photography. Personnel making up the Unit's field party included:

Gary L. HUFFORD	Oceanographer
LT James M. SEABROOKE,	
USCG	Oceanographer
MST1 Peter R. SAN JULE,	
USCG	Oceanographic Technician
SO2 Robert C. MURRELL,	
USCG	Oceanographic Technician
MST2 Kenneth THOENI, USCG	Oceanographic Technician
YN2 Dwight E. OLSON, USCG	Oceanographic Technician
MST3 Bruce B. EDWARDS,	
USCG	Oceanographic Technician

Initially, the cruise was to be conducted over an eighty day period, starting in early January and ending on April first. However, GLACIER was assigned to first break a channel to McMurdo Station and met unexpectedly heavy ice concentrations, which delayed the start of IWSOE '69 until mid-February. The cruise lasted till March 24, 1969.

### Station Procedure

On February 13, GLACIER departed Punta Arenas, Chile. It was tentatively agreed to concentrate the investigations in the southeastern part of the Weddell Sea in the area of the current meter arrays planted during IWSOE '68 until their recovery. However, the ship ran into heavy ice that was impenetrable sixty miles from the current meter arrays. After several unsuccessful attempts were made, it was necessary to abandon recovery of the arrays during IWSOE '69. A series of stations were then taken in the area.

The initial procedure followed by the ship upon arriving at station depended largely on ice conditions. During IWSOE '69 heavy ice concentrations were encountered, and only twenty-seven oceanographic stations were taken. It was usually possible to ease the ship's bow into an ice floe and by slowly turning the screws, hold the bow in the floe until it froze, at the same time clearing a small area on either side aft of brash ice. This provided a clear area in which to lower oceanographic equipment. This procedure was adopted instead of the one utilized during IWSOE '68, i.e., easing the starboard side against a floe. It was necessary to keep both sides clear for work due to the addition of a starboard luffing crane and winch.

Although station plans were constantly changing owing to a number of circumstances, a station usually consisted of a Nansen cast, bottom photography, an STD cast, piston coring and bottom trawls and dredges.

Satellite navigation contributed greatly to the success of station position determination. No navigational aids are available in the Weddell Sea, and celestial navigation is hampered by generally overcast skies. Since the accuracy of satellite navigation is not affected by either clouds or indistinct horizon, use of this method during the expedition yielded accurate positions.

### Data Acquisition and Initial Analysis

A summary of data collected at each station is presented in table 1.

### Temperature Data

Teflon-lined Nansen bottles were equipped with two protected reversing thermometers and, at alternate depths below 150 meters, with unprotected thermometers. Sampling depths were approximately 0, 10, 25, 50, 75, 100, 150, 200, 300, 400, 500, 600, 700, 800, 1000, 1250, 1500 meters and at 300 meter intervals below 1500 meters, except that several bottles were placed at 25 meter intervals near the bottom.

With the ship firmly held in the ice on most stations, a zero wire angle was generally obtained and an acoustic depth-telemetering pinger was placed on the wire to make it possible to obtain samples within a few meters of the bottom.

**Table I. Summary of Data Collected at Each Station.**

Station	Date	Time (GMT)		Position		Depth of Water (meters)	Maximum Sampling Depth-Nansen STD	Nansen	STD	Bottom Bio	Cores	Bottom Photo.	Seal Census
	1969	On	Off	LAT S	LONG W								
0001	24 Feb	0120	1824	74-31.6	30-18.9	513	510	X		X	X		X
0002	25	0100	1454	75-31.5	30-08.3	378	375	X	X	X	X		X
0003	26	0230	1020	76-38.1	31-48.4	436	434	X			X		X
0004	26	1730	2350	77-05.4	35-02.6	803	800	X		X	X		X
0005	27	0800	1730	77-19.7	36-41.3	1065	1063	X	X	X	X		X
0006	28 Feb-01 Mar	2330	0900	76-50.2	40-55.4	513	510	X		X	X		X
0007	01 Mar	1305	2050	77-16.0	42-38.3	500	495	X		X	X		
0008	02	0112	1054	77-38.5	42-27.8	570	565	X		X	X		X
0009	03-04	2110	0245	77-54.2	45-13.3	250	246	X		X	X		
0010	04	1215	2045	77-50.0	42-05.2	657	655	X		X	X		X
0011	05	1700	2300	77-10.2	38-40.8	820	815	X		X	X	X	X
0012	06	1645	2330	77-18.9	37-42.3	988	985	X		X	X	X	X
0013	07	0600	0900	77-50.2	35-32.9	343	341	X	X				
0014	07	1245	1610	77-22.0	34-29.2	362	360	X	X				X
0015	08	0300	0645	76-52.9	32-49.7	375	372	X	X		X		
0016	09	0230	0630	74-40.0	31-04.1	510	508	X	X				
0017	09	1355	1638	74-19.0	32-28.6	591	590	X	X				X
0018	10-11	0112	1418	74-15.0	32-30.0	640	240	Current Meter Station					X
0019	11-12	1715	0100	74-06.3	32-36.2	1447	1445	X		X	X	X	X
0020	12	1008	1850	73-49.4	31-40.9	2317	2314	X		X	X	X	X
0021	13	0500	1616	73-52.0	31-17.6								
0022	14	0045	0958	73-29.0	30-24.1	3035	3035	X		X	X		X
0023	14-15	1448	0540	72-47.5	30-28.3	3658	3658	X		X	X		
0024	15-16	2104	0950	71-36.1	30-36.1	3840	3800	X		X	X		X
0025	16-17	2348	0506	70-38.8	33-32.3	4343	4340	X				X	
0026	17-18	2148	1204	68-36.8	32-03.6	4483	1090	X		X	X		
0027	19-21	2344	1725	64-50.6	41-24.7	4572	4572	X		X	X		

Standard analysis procedures were used for correcting thermometers and determining thermometric and accepted depths. Use of the shipboard computer made accurate real time data analysis and quality control possible on board.

#### Salinity Determination

Salinity was determined using an inductive salinometer, and the onboard computer.

#### Oxygen and pH

Dissolved oxygen and pH were determined on all the water samples using the methods described by Strickland and Parsons (1965). From the oxygen data, percent saturation and apparent oxygen utilization were calculated giving a gross estimate of biological activity.

#### Nutrient Analysis

Water samples were analyzed at sea for in-

organic phosphate, nitrate, nitrite and silicate using the methods described by Strickland and Parsons (1965). The ultraviolet spectrophotometer was shock-mounted to counteract the continual vibration of the ship in breaking ice. This arrangement worked quite well.

Frozen samples for ammonia and total phosphorus were returned to the U.S. Coast Guard Oceanographic Unit for later analysis. Due to problems with the distilled water and de-ionizer, the data will be given in a later report.

#### Salinity-Temperature-Depth System (STD)

A continuous trace of temperature and salinity versus depth was obtained at only 8 stations due to malfunctions of the salinity sensor. A Nansen bottle was attached to the STD wire just above the sensor unit for calibration of the STD data.



## Bottom Photography

A Thorndike (1959) type bottom contact camera system was used for bottom photographs. The camera system was set up to take a photograph when the camera lens was three feet above the bottom and at a sixty-degree angle from the vertical. The ship's photographer developed the film. The compass-oriented photographs revealed many benthic organisms as well as current ripple marks.

## Results of Preliminary Analysis

Due to the limited number of oceanographic stations (27) only one vertical section was selected for analysis (figure 2-7).

Analysis of the data using preformed nutrients (figures 5-6) as well as temperature and salinity (figures 2-3) indicate that three water masses were present in the southeast Weddell Sea (table 2). These were the water mass found on the continental shelf; a warm intrusion which was found from about 400 meters to 1600 meters depth off the shelf; and the bottom water mass which may or may not be Antarctic Bottom Water.

The temperature and salinity distribution of the shelf water and warm deep water showed that the bottom water present could not be produced by mixing of these two masses (figure 2-3). Deacon (1937) postulated that the formation of Antarctic Bottom Water takes

place only in the southwestern Weddell Sea. Elder and Seabrooke (in press) found formation of Antarctic Bottom Water in the southwestern Weddell Sea, (west of 40° longitude) during IWSOE '68 by mixing of dense shelf water with warm deep water. Data from IWSOE '69 indicates that Antarctic Bottom Water formation does not take place in the southeastern Weddell Sea (east of 40° longitude) in the summer.

A question arises as to where the bottom water comes from in the cross section for IWSOE '69. Bottom photographs obtained from the USNS Eltanin and IWSOE '68 (Hollister and Elder, 1969) indicate a westerly flowing bottom current which follows the bathymetric contours in the southern Weddell Sea. Only a few photographs were obtained during IWSOE '69, but they also suggest a westerly flowing bottom current. Therefore, the bottom water present in the southeast Weddell Sea in 1969 may be part of the westerly flowing Antarctic coastal current which is evident only in the Weddell Sea area, where an extensive cyclonic motion occurs to the south of the Circumpolar current (Sverdrup, Johnson and Fleming, 1942). Further investigation is being conducted to determine the origin of the bottom water found in the southwestern Weddell Sea. Data collected during IWSOE '70 will hopefully add light to the problem.

Table II. Mean Characteristics of water masses present in the Weddell Sea in February 1969.

Year	Water Mass	Temperature	Salinity	Preformed Nutrients ( $\mu\text{g-at/l}$ )	
				Phosphate	Nitrate
1969	Shelf Water	-1.60° C	<34.60‰	1.65 ± .19	22.37 ± 2.46
	Warm Intrusion	0.40° C	34.67‰	1.15 ± .22	14.57 ± 2.89
	Bottom Water	-0.26° C	34.66‰	1.31 ± .12	17.38 ± 2.10

## BIBLIOGRAPHY

- Deacon, G. E. R. "The Hydrology of the Southern Ocean." *Discovery Reports*, Vol. 15, pp. 1-24, 1937.
- . "The Southern Ocean." *The Sea*, Vol. 2, pp. 281-294. New York: John Wiley and Sons, 1963.
- Elder, R. B. and J. M. Seabrooke. "The Formation of Antarctic Bottom Water. (A Report on the International Weddell Sea Oceanographic Expedition)." *AAAS Proceedings of 1969* (in press).
- Fofonoff, N. P. "Some Properties of Sea-water Influencing the Formation of Antarctic Bottom Water." *Deep Sea Research*, Vol. 4, pp. 32-35, 1956.
- Hollister, C. D. and R. B. Elder, "Contour Currents in the Weddell Sea." *Deep Sea Research*, Vol. 16, pp. 99-101, 1969.
- Strickland, J. H. and J. R. Parsons. *A Manual of Sea Water Analysis*. Ottawa: Fisheries Research Board of Canada, 1965.
- Sverdrup, H. U., M. W. Johnson and R. Fleming. *The Oceans*. Englewood Cliffs, New Jersey: Prentice-Hall, 1942.
- Thorndike, E. M. "Deep-sea Cameras of the Lamont Observatory." *Deep Sea Research*, Vol. 5, pp. 234-7, 1959.

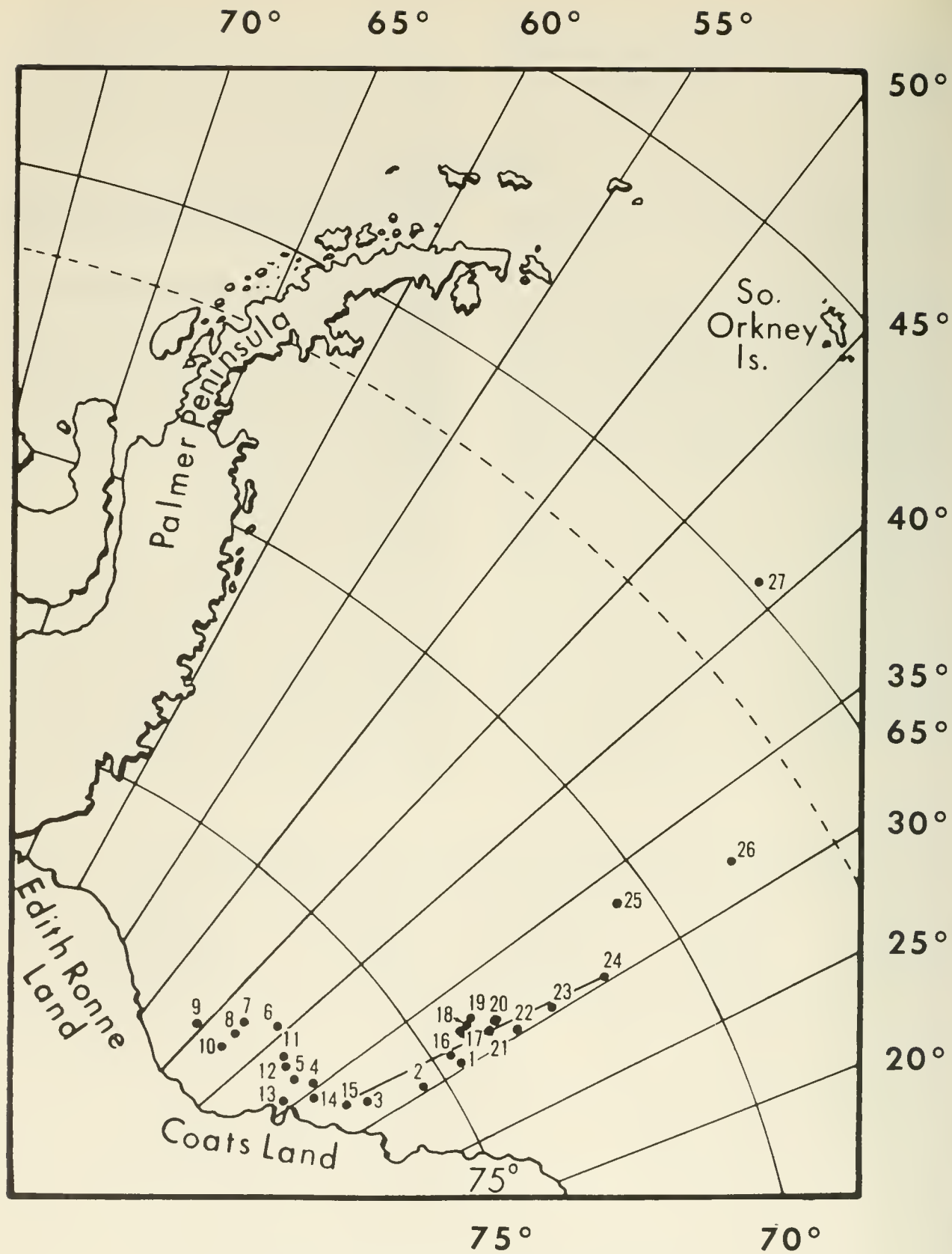


Figure 1. IWOSE '69 hydrographic station locations.

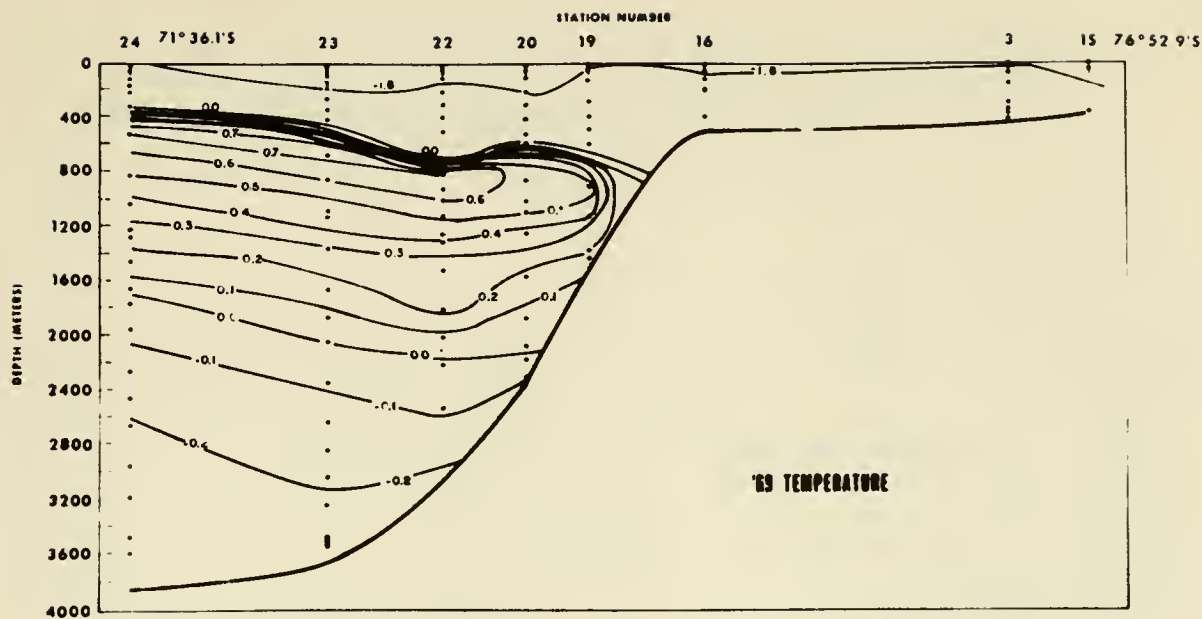


Figure 2. Vertical distribution of temperature ( $^{\circ}\text{C}$ ) during IWSOE '69.

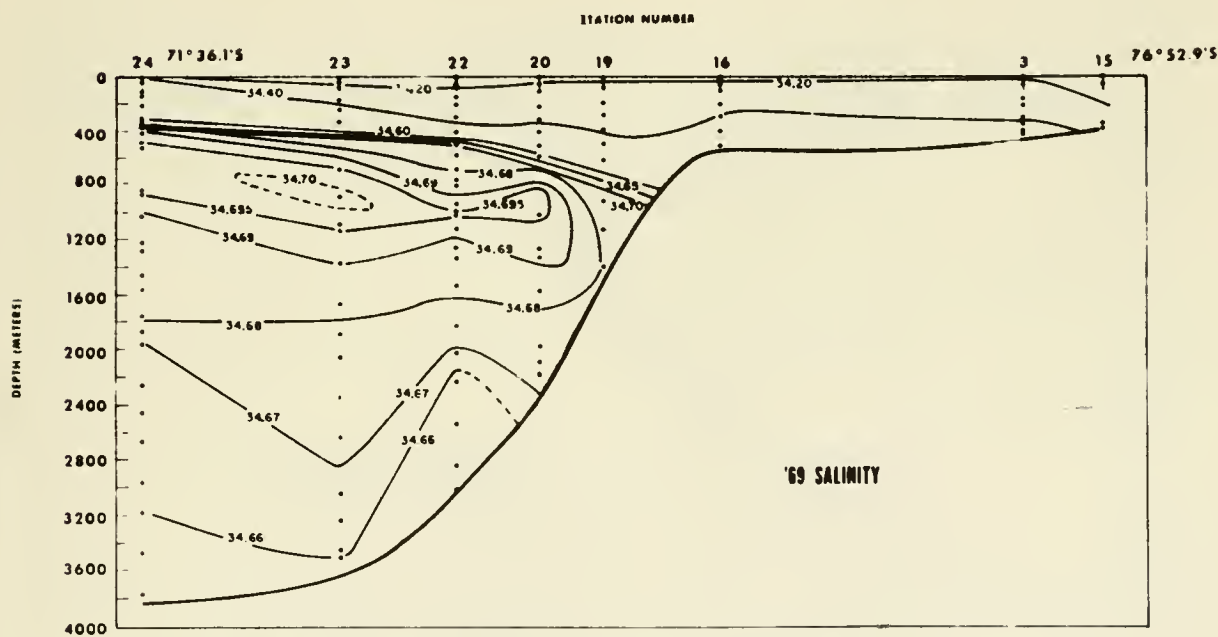


Figure 3. Vertical distribution of salinity ( $\text{‰}$ ) during IWSOE '69.

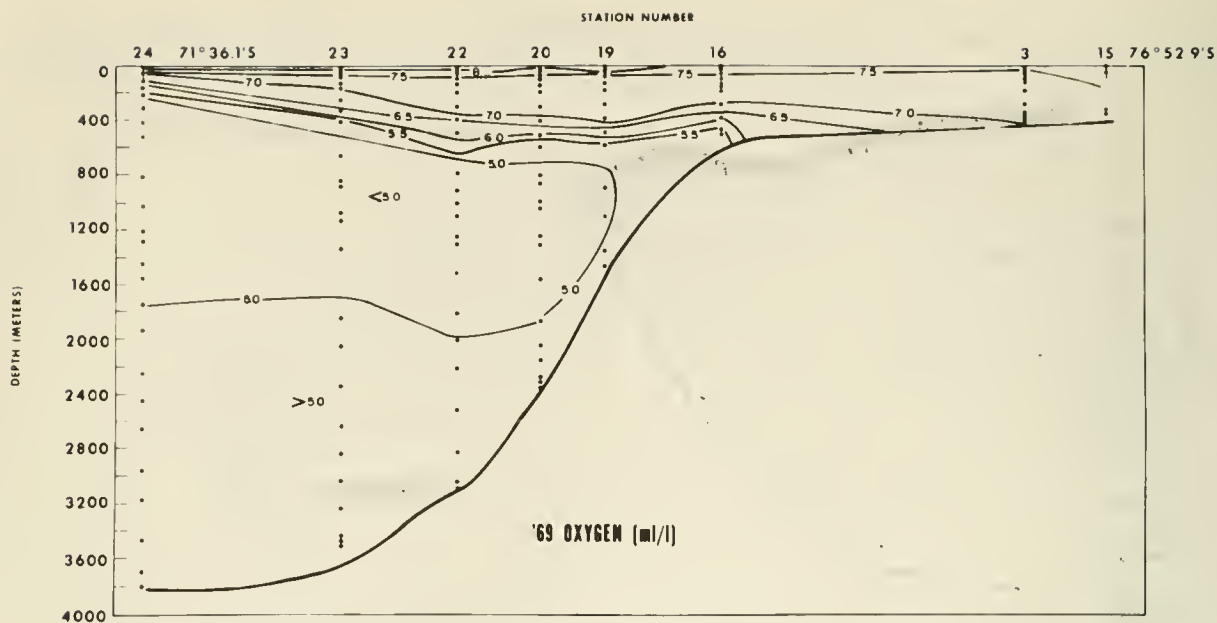


Figure 4. Vertical distribution of dissolved oxygen (ml/L) during IWSOE '69.

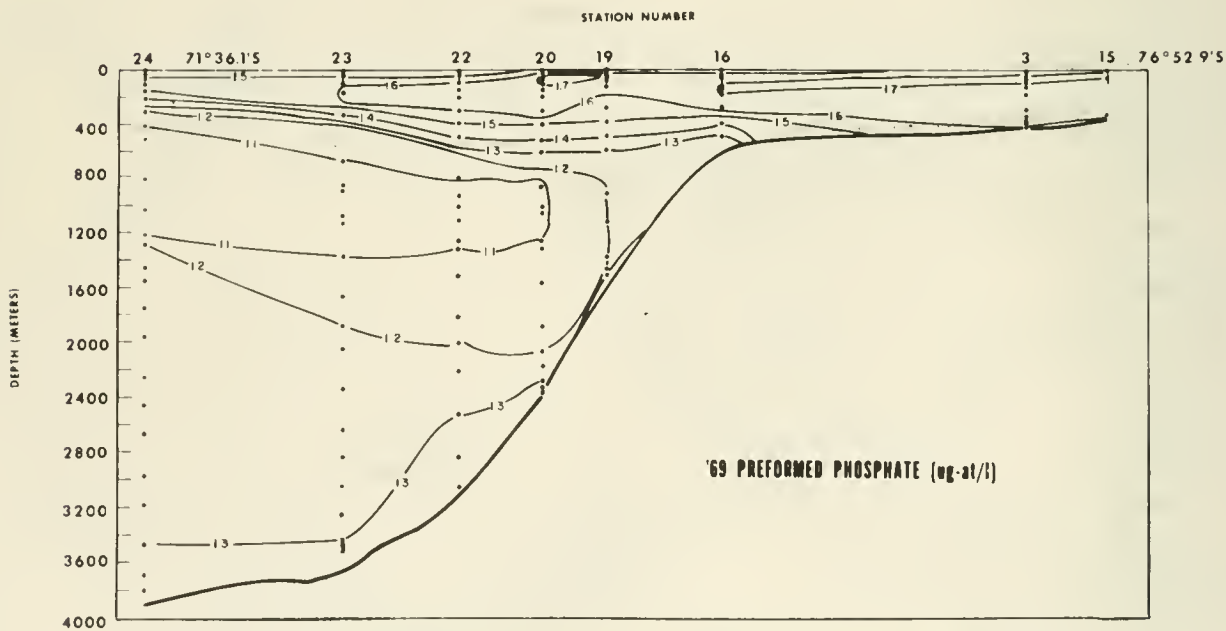


Figure 5. Vertical distribution of performed phosphate ( $\mu\text{g-at/L}$ ) during IWSOE '69.



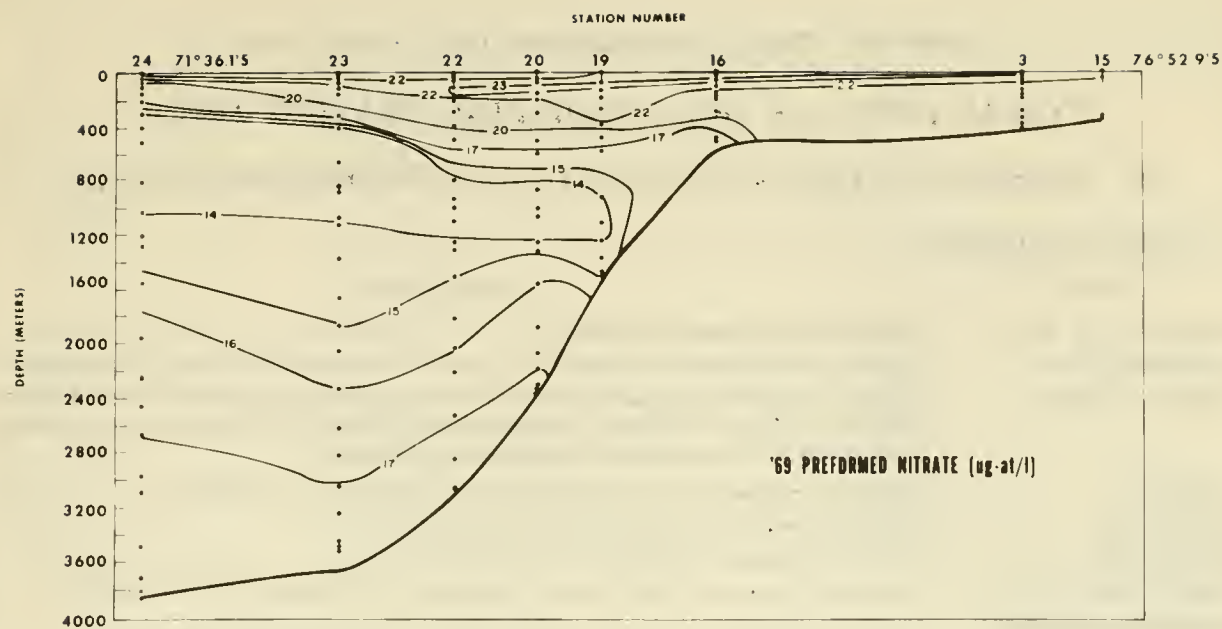


Figure 6. Vertical distribution of performed nitrate ( $\mu\text{g-at/L}$ ) during IWSOE '69.

Table III. Table of Oceanographic Data (IWSOE '69).

## EXPLANATION OF OCEANOGRAPHIC STATION DATA

### A. Description of Entries, Units and Codes on NODC Station Listing

#### 1. Surface Observations

<i>Entry</i>	<i>Description of Field</i>
NODC REF. ID. NO.	NODC reference identity number.
COUNTRY CODE	Indicates nationality of the institute or agency conducting the survey or expedition.
CRUISE NUMBER	A reference number assigned by NODC for storage-retrieval purposes. NODC Publication C-1, <i>Reference Sources of Oceanographic Station Data</i> , gives complete bibliographic and other pertinent information for each cruise.
SHIP CODE	Alphabetic representation of ship's name (or ICES numeric ship code).
LATITUDE	Degrees, minutes, and tenths of minutes, N or S.
LONGITUDE	Degrees, minutes, and tenths of minutes, E or W.
DRIFT INDICATOR	The letter D appears in this column if extensive drift occurred while on station.
MARSDEN SQUARE	
10°	Marsden square number according to the Marsden square system.
1°	The one-degree square number according to the Marsden square system.
STATION TIME	
(GMT)	Date and time given by the originator (GMT).
MONTH	Month (GMT).
DAY	Day (GMT).
HR. 1-10	GMT to nearest tenth of an hour.
YEAR	Year.
ORIGINATOR'S CRUISE NUMBER	Alphabetic or alpha-numeric designator as assigned by the originator. If the year of the cruise forms part of the cruise numbering system, the year digits are found in preceding field.
STATION NUMBER	Originator's station number or designator.
DEPTH OF BOTTOM	Corrected or uncorrected sounding depth in meters.
MAX. DEPTH OF SAMPLES	Depth of deepest sample in hundreds of meters to nearest hundred-meter interval.
WAVE OBSERVATIONS	
DIR.	Direction from which the dominant waves are coming, in tens of degrees, according to WMO Code 0885.
HGT.	Height of dominant waves according to WMO Code 1555.
PER.	Period of dominant waves according to WMO Code 3155.
SEA AMT.	Sea amount (sea state) according to WMO Code 3700 (preceded by the letter A).
WEATHER CODE	If preceded by the letter X, weather according to WMO Code 4501. A numeric two-digit entry indicates weather according to WMO Code 4677.
*INSTR./CLOUD	This field is used either for recording instrument code when electronically obtained data are being reported, or for reporting cloud type and cloud amount when conventional Nansen cast data are being reported.
*INSTR.	A two character code representing instrument package of system.
TYPE	Cloud type according to WMO Code 0500.
AMT.	Cloud amount according to WMO Code 2700.
NODC STATION NUMBER	Assigned by NODC for data storage and retrieval purposes. The NODC Reference Identity and Station numbers combined, uniquely define each station in the NODC archives.

*DT/S <sup>u</sup> /D	This indicator specifies that the reported data have been obtained electronically rather than by Nansen-type casts. U (up) and D (down) are cast indicators for electronically obtained serial data and specify that the data were taken while hoisting or lowering respectively.
WATER COLOR	Water color according to Forel-Ule Code.
TRANS. (m)	Water transparency in meters as determined by Secchi disc.
WIND	
DIR.	Direction from which wind is blowing in tens of degrees, according to WMO Code 0877.
SPEED OR FORCE	If preceded by letter S, wind speed in knots; if preceded by letter F, wind force in Beaufort code.
BAROMETER (mbs)	Barometric pressure in millibars; tens, units, and tenths places only.
AIR TEMPERATURE °C.	
DRY BUL	Dry bulb air temperature in degrees centigrade, to tenths.
WET BULB	Wet bulb air temperature in degrees centigrade, to tenths.
VIS CODE	Visibility according to WMO Code 4300.
NUMBER OBS, LEVEL	The number of observed levels associated with the station.
SPECIAL	Entries in this space vary with individual cruises or stations. Information concerning
OBSERVATIONS	entries in this field can be requested from the NODC.

2. A complete description of the codes can be found in NODC publication M-2 (Rev. August 1964), "Processing Physical and Chemical Data from Oceanographic Stations."

REFERENCE	SHIP	LATITUDE	LONGITUDE	DEPT	1/2 RSDEN	STATION TIME			YEAR	ORIGINATOR'S		DEPTH	MAX. DEPTH	WAVE			WEA-	CLOUD	NOOC
						MO	DAY	HR./10		CRUISE	STATION			DIR	HGT	PER			
CTRY	IO.			INCHES	SQ	10'	1"			NO.	NUMBER	TO	OF				CODE	TYPE	STATION
CODE	NO.											BOTTOM	SAMPLES					AMT	NUMBER
318085	GL	74316S	030189W	555	40	02	24	115	1969	001		0515	05	24	1	8	X4	2	6
					WATER		WIND		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS						
					COLOR	TRANS.	DIR.	SPEED	BARO-	DRY	WET	VIS.							
					CODE	INT		OR	METER	BULB	BULB	CODE							
								FORCE	(mbars)										

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPT INCHES	MARSDEN SQUARE		STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR	1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT	
318085	GL		75314S	030080W		555	50	02	25	085	1969		002		0421	03	00	0	X		X4	0	3	0003
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	METER (mbs)	DRY BULB	WET BULB												
						DT	SD	00	500	951	-145	-147	1	20										
MESSENGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S C							
		STD	0000	-0196	3394	2734	0007426	0000	14387															
	080	OBS	0000	-0196	33940	2734			14387															
		OBS	0008	-0179	34185	2754			14400															
		STD	0010	-0179	3425	2759	0005074	0006	14401															
	000	OBS	0010	-0179	34250	2759			14401															
		STD	0020	-0180	3431	2764	0004605	0011	14403															
		OBS	0020	-0180	34310	2764			14403															
		OBS	0025	-0180	34303	2763			14404															
		STD	0030	-0180	3430	2763	0004691	0016	14404															
		OBS	0030	-0180	34298	2763			14404															
		STD	0050	-0175	3430	2763	0004676	0025	14410															
		OBS	0050	-0175	34300	2763			14410															
		STD	0075	-0170	3431	2764	0004582	0037	14417															
		OBS	0075	-0170	34312	2764			14417															
		STD	0100	-0170	3432	2765	0004491	0048	14421															
		OBS	0100	-0170	34322	2765			14421															
		STD	0125	-0173	3433	2765	0004406	0059	14424															
		OBS	0125	-0173	34330	2765			14424															
		STD	0150	-0169	3434	2766	0004334	0070	14430															
		OBS	0150	-0169	34339	2766			14430															
		STD	0200	-0162	3436	2767	0004167	0091	14442															
		OBS	0200	-0162	34360	2767			14442															
		STD	0250	-0155	3438	2769	0003995	0112	14454															
		OBS	0250	-0155	34382	2769			14454															
		OBS	0264	-0148	34402	2770			14460															
		OBS	0277	-0102	34440	2772			14484															
		STD	0300	-0088	3445	2773	0003699	0131	14495															
		OBS	0300	-0088	34453	2773			14495															
		OBS	0306	-0105	3439P	2768P																		
		OBS	0319	-0066P	34430	2770P																		
		OBS	0332	-0073	34460	2772			14507															
		OBS	0335	-0098	34450	2773			14496															

REFERENCE	SHIP ID. NO.	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPT INCHES	MARSDEN SQUARE		STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
						10"	1"	MO	DAY	HR	1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT	
318085	GL		75317S	030089W		555	50	02	25	115	1969		002		0421	04	00	0	X		X4	7	6	0004
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	METER (mbs)	DRY BULB	WET BULB												
								00	500	951	-117	-118	2	10										
MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ol/l	TOTAL-P μg - ol/l	NO <sub>2</sub> -N μg - ol/l	NO <sub>3</sub> -N μg - ol/l	SiO <sub>4</sub> -Si μg - ol/l	pH	S C							
		STD	0000	-0180	3423	2757	0005255	0000	14398	764														
	109	OBS	0000	-0180	34227	2757			14398	764	196			016	273	065	752							
		STD	0010	-0180	3423	2758	0005210	0005	14400	769														
109		OBS	0010	-0180	34232	2758			14400	769	198			007	273	065	781							
		STD	0020	-0180	3424	2758	0005142	0010	14402	766														
109		OBS	0026	-0180	34251	2759			14403	764	195			008	280	066	789							
		STD	0030	-0180	3427	2761	0004905	0015	14404	761														
		STD	0050	-0181	3432	2765	0004507	0025	14408	748														
109		OBS	0052	-0181	34322	2765			14408	747	204			008	288	067	785							
		STD	0075	-0179	3433	2765	0004419	0036	14413	764														
109		OBS	0079	-0179	34336	2766			14413	765	204			009	296	062	785							
		STD	0100	-0181	3434	2766	0004322	0047	14416	753														
109		OBS	0105	-0182	34342	2767			14416	751	212			003	292	069	788							
		STD	0125	-0181	3435	2767	0004230	0058	14420	748														
		STD	0150	-0180	3435	2767	0004218	0068	14425	744														
109		OBS	0157	-0180	34353	2767			14426	742	199			050	310	069	788							
		STD	0200	-0179	3436	2768	0004115	0089	14434	728														
109		OBS	T0209	-0178	34365	2768			14436	725	180			005	293	070	789							
		STD	0250	-0164	3438	2769	0003980	0109	14450	710														
		STD	0300	-0138	3442	2772	0003742	0129	14471	680														
109		OBS	T0307	-0134	34429	2772			14474	675	210			006	306	078	785							
109		OBS	T0390	-0066	34530	2778			14521	592	206			008	321	089	783							



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH METER	MARSSEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	IO. NO.					10'	1'	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT
318085		GL	76281S	031484W	555	61	02	26	055	1969		003		0436	04	00	0	X		X2	7	8	0005
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS.		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS									
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB								
						00	500	928	-051	-056	8	12											
MESSNGR TIME HR. 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-20°	Σ Δ ρ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	ST C						
		STD	0000	-0172	3402	2740	0006879	0000	14399	794													
	056	OBS	0000	-0172	34018	2740			14399	794	179		017	268	062	750							
		STD	0010	-0173	3403	2741	0006786	0007	14401	794													
	056	OBS	0018	-0174	34038	2742			14402	794	176		009	263	063	781							
		STD	0020	-0175	3407	2744	0006460	0013	14402	788													
		STD	0030	-0179	3420	2755	0005446	0019	14403	762													
	056	OBS	0043	-0182	34306	2764			14406	739	205		005	289	065	781							
		STD	0050	-0182	3431	2764	0004581	0029	14407	735													
	056	OBS	0068	-0183	34316	2764			14409	732	201		010	269	066	782							
		STD	0075	-0183	3432	2765	0004510	0041	14411	735													
	056	OBS	0094	-0183	34318	2765			14414	743	204		001	291	066	782							
		STD	0100	-0183	3432	2765	0004471	0052	14415	743													
		STD	0125	-0182	3432	2765	0004457	0063	14419	741													
	056	OBS	0144	-0182	34329	2765			14423	742	202		000	295	068	782							
		STD	0150	-0182	3433	2766	0004366	0074	14424	739													
	056	OBS	0195	-0183	34344	2767			14431	735	197		025	314	070	780							
		STD	0200	-0183	3435	2767	0004180	0096	14432	735													
		STD	0250	-0181	3437	2769	0004001	0116	14441	732													
	056	OBS	T0295	-0180	34384	2770			14450	726	201		008	280	071	780							
		STD	0300	-0181	3439	2770	0003820	0136	14450	724													
	056	OBS	0345	-0183	34406	2772			14457	716	208		000	300	071	782							
	056	OBS	0370	-0179	34424	2773			14463	719	207		002	300	072	781							
	056	OBS	T0395	-0187	34438	2774			14464	726	213		000	270	071	781							
		STD	0400	-0188	3445	2775	0003279	0171	14464	725													
	056	OBS	0429	-0191	34514	2781			14469	703	211		000	303	076	782							

REFERENCE CTRY CODE	SHIP NO.	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	WAVE MOCT	MARSEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
						10'	1'	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT			
						10'	1'	MO	DAY	HR.1/10															
318085	GL		77054S	035026W		555	75	02	26	205	1969		004		0805	08	00	0	X		X7	5	7		0006
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS.		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS											
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB	WET BULB										
						00	500	915	-050	-054	8	13													
MESSAGE TIME HR. 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-20°	Σ Δ ρ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	ST C								
		STD	0000	-0183	3426	2760	0004964	0000	14397	763															
	195	OBS	0000	-0183	34264	2760			14397	763	180		009	280	067	731									
		STD	0010	-0183	3427	2760	0004935	0005	14399	765															
		STD	0020	-0182	3427	2761	0004914	0010	14401	768															
		STD	0030	-0182	3427	2761	0004886	0015	14403	770															
	195	OBS	0031	-0182	34272	2761			14403	770	185		006	282	067	769									
		STD	0050	-0183	3430	2763	0004656	0024	14406	743															
	195	OBS	0056	-0183	34309	2764			14407	740	193		002	294	068	779									
		STD	0075	-0182	3433	2766	0004412	0036	14411	754															
	195	OBS	T0082	-0182	34331	2766			14412	757	206		004	292	069	782									
		STD	0100	-0182	3435	2767	0004244	0046	14416	745															
		STD	0125	-0182	3436	2768	0004152	0057	14420	733															
	195	OBS	0133	-0182	34369	2769			14421	730	201		002	296	070	783									
		STD	0150	-0182	3438	2770	0003983	0067	14424	729															
	195	OBS	0183	-0183	34392	2771			14430	728	208			299	070	781									
		STD	0200	-0183	3440	2771	0003797	0087	14433	728															
		STD	0250	-0185	3444	2775	0003455	0105	14441	726															
	195	OBS	0284	-0186	34466	2777			14445	724	208		000	299	071	781									
		STD	0300	-0187	3449	2779	0003037	0121	14449	722															
	195	OBS	T0384	-0191	34580	2786			14462	717	192		000	295	069	782									
		STD	0400	-0191	3459	2787	0002201	0147	14465	718															
	195	OBS	T0484	-0192	34610	2789			14479	721	197		000	297	068	784									
		STD	0500	-0193	3461	2789	0001960	0168	14481	721															
	195	OBS	T0587	-0197	34629	2790			14494	719	200		000	295	069	782									
		STD	0600	-0197	3463	2790	0001756	0187	14496	718															
	195	OBS	0687		34660				712	212			001	302	071	782									
		STD	0700	-0198	3467	2794	0001391	0202	14513	711															
	195	OBS	0765	-0198	34713	2797			14524	707	212		000	297	073	782									
		STD	0800	-0195	3472	2798	0000959	0214	14532	707															
	195	OBS	T0800	-0195	34721	2798			14532	707	209		002	296	071	788									

REFERENCE	SHIP	LATITUDE	LONGITUDE	MO	DAY	YEAR	ORIGINATOR'S	DEPTH	MAX.	WAVE	WEA-	CLOUD		NODC
CRUISE	CODE	° 1/10	° 1/10	10"	1"	HR. 1/10	NO.	TO	DEPTH	OBS.	THER	CODES		STATION
NO.								BOTTOM	OF	SEA	CODE	TYPE	AMT	NUMBER

318085 GL 77197S 036413W 555 76 02 27 115 1969 005 1085 11 00 0 X X7 5 8 0007

WATER	WIND	AIR TEMP. °C	NO. OBS.	SPECIAL
COLOR	DIR.	DRY	WET	OBSERVATIONS
CODE	TRANS.	BULB	RULE	
	06	505	926	-059 -061 5 16

MESSNGR	CARD	DEPTH	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME	Δ ρ	SOUND	O <sub>2</sub>	PO <sub>4</sub> -P	TOTAL-P	NO <sub>3</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	STATION
TIME	TYPE	(m)				ANOMALY-10 <sup>3</sup>	DYN. M. X 10 <sup>3</sup>	VELOCITY	ml/l	μg - at/l	μg - at/l	μg - at/l	μg - at/l	μg - at/l		NUMBER
HR 1/10																
	STD	0000	-0181	3428	2761	0004853	0000	14399	839							
138	OBS	0000	-0181	34279	2761			14399	839	169		021	262	070	764	
	STD	0010	-0182	3428	2761	0004838	0005	14400	845							
138	OBS	0019	-0182	34282	2762			14401	836Q	170		007	252	068	792	
	STD	0020	-0182	3428	2762	0004815	0010	14402	852							
138	OBS	0024	-0182	34280	2761			14402	854	163		006	248	064	795	
	STD	0030	-0182	3430	2763	0004670	0014	14403	814							
	STD	0050	-0183	3436	2768	0004195	0023	14407	727							
138	OBS	0051	-0183	34365	2768			14407	725	210		007	287	069	788	
	STD	0075	-0184	3440	2771	0003869	0033	14411	725							
138	OBS	0076		34403					725	202		006	297	068	787	
	STD	0100	-0186	3442	2773	0003697	0043	14415	733							
138	OBS	0103	-0186	34424	2773			14415	734	209		005	293	069	784	
	STD	0125	-0187	3444	2775	0003524	0052	14419	727							
	STD	0150	-0189	3446	2776	0003352	0060	14422	723							
138	OBS	0155	-0189	34464	2777			14423	722	219		002	300	069	785	
	STD	0200	-0195	3450	2780	0002998	0076	14428	723							
138	OBS	T0208	-0196	34502	2780			14429	723	204		001	298	068	788	
	STD	0250	-0195	3453	2782	0002738	0091	14437	720							
	STD	0300	-0193	3456	2784	0002482	0104	14447	716							
138	OBS	0311	-0193	34561	2785			14449	715	192		000	293	068	788	
	STD	0400	-0190	3459	2787	0002203	0127	14465	721							
138	OBS	T0412	-0190	34591	2787			14467	722	198		000	295	068	788	
	STD	0500	-0191	3461	2788	0001991	0148	14482	719							
138	OBS	T0511	-0191	34616	2789			14484	719	205		000	295	067	788	
138	OBS	0583	-0194	34620	2789			14494	725	204		001	293	067	788	
	STD	0600	-0196	3462	2790	0001821	0167	14496	725							
	STD	0700	-0206	3464	2791	0001614	0184	14509	724							
138	OBS	T0758	-0208	34644	2792			14517	720	207		003	299	069	784	
	STD	0800	-0207	3465	2792	0001444	0200	14525	714							
138	OBS	T0883	-0204	34670	2794			14541	706	199		000	294	071	786	
	STD	0900	-0202	3468	2794	0001216	0213	14545	706							
138	OBS	T0989	-0194	34702	2796			14564	706	202		001	298	070	788	
	STD	1000	-0193	3471	2797	0000940	0224	14566	705							
138	OBS	T1083	-0191	34743	2799			14582	697	198		002	299	072	789	

16



REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DEPTH INDICATOR	PARSEDEN		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- TH- ER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE
318085	GL	76502S	040554W	556	60	03	01	025	1969		006	0515	05	00	0	X		X1	7	1		0009

WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. IMI	DIR.	SPEED OF FORCE		DRY BULB	WET BULB			
		15	16	947	-149	-153	8	11	

MESSAGE	CAST	CARD	DEPTH	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME	Δ D	SOUND	O <sub>2</sub>	PO <sub>4</sub> -P	TOTAL-P	NO <sub>2</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	STATION
TIME	NO.	TYPE	(m)				ANOMALY-2107	DYN. M.	VELOCITY	ml/l	μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l		NUMBER
HR. 1/10								X 10 <sup>3</sup>									
		STD	0000	-0177	3439	2771	0003979	0000	14402	828							
031	OBS	0000	-0177	34394	2771				14402	828	185			011	255	060	770
	STD	0010	-0180	3438	2769	0004089	0004		14402	814							
031	OBS	0013	-0181	34373	2769				14402	813	191			008	264	061	780
	STD	0020	-0183	3439	2770	0003983	0008		14403	816							
031	OBS	0023	-0184	34392	2771				14403	817	189			007	264	061	783
	STD	0030	-0183	3440	2771	0003931	0012		14404	817							
031	OBS	0048	-0181	34406	2772				14408	800	194			008	258	062	782
	STD	0050	-0182	3441	2772	0003814	0020		14408	792							
031	OBS	0074		34469					729	221				005	268	064	778
	STD	0075	-0187	3447	2777	0003326	0029		14411	729							
031	OBS	0100	-0190	3452	2781	0002942	0037		14414	731				003	294	063	778
	STD	0100	-0190	34517	2781				14414	731	212						
	STD	0125	-0190	3454	2783	0002766	0044		14419	725							
031	OBS	T0151	-0190	3456	2784	0002590	0050		14423	719							
	STD	0200	-0193	3459	2787	0002315	0063		14423	719	217			001	297	066	779
031	OBS	T0204	-0193	34596	2787				14431	719				000	292	064	778
	STD	0250	-0197						719								
	STD	0300	-0201						720								
031	OBS	0309	-0202						720	224				000	294	064	780
	STD	0400	-0199						722								
031	OBS	T0412	-0198						722	230				000	296	064	779
	STD	0500	-0194						715								
031	OBS	T0513	-0193						713	212				007	295	065	781

REFERENCE	SHIP	LATITUDE	LONGITUDE	DEPTH	PARSEDEN	STATION TIME			YEAR	ORIGINATOR'S		DEPTH	MAX. DEPTH	WAVE			WEA-	CLOUD	NODC	
						MO	DAY	HR./10		CRUISE	STATION			DIR.	HGT	PER				SEA
CTRY	ID.	1/10	1/10	INDIC	SQ	10"	1"		NO.	NUMBER	TO	OF							NUMBER	
318085	GL	77160S	042383W	556	72	03	01	145	1969	007	0510	05	00	0	X		X4	5	7	0010

WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (MI)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB			
		13	S30	937	-165	-167	6	11	

MESSAGE	CAST	CARD	DEPTH	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME	Δ D	SOUND	O <sub>2</sub>	PO <sub>4</sub> -P	TOTAL-P	NO <sub>2</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	STATION
TIME	NO.	TYPE	(m)				ANOMALY-2107	DYN. M.	VELOCITY	ml/l	μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l		NUMBER
HR. 1/10								X 10 <sup>3</sup>									
		STD	0000	-0188						751							
157	OBS	0000	-0188	34630	27900					751	209			010	287	065	761
	STD	0010	-0188							751							
157	OBS	0015	-0188	34437	2774				14400	751	218			008	286	064	779
	STD	0020	-0188	3444	2775	0003588			14401	750							
	STD	0030	-0187	3444	2775	0003553			14403	747							
157	OBS	0030	-0187	34444	2775				14403	747	201			008	297	065	782
	STD	0050	-0189	3447	2777	0003337			14406	737							
157	OBS	0055	-0189	34473	2777				14407	735	223			007	291	065	780
	STD	0075	-0188	3449	2779	0003169			14411	731							
157	OBS	0080	-0188	34494	2779				14412	730	222			006	297	065	780
	STD	0100	-0191	3454	2783	0002763			14414	723							
157	OBS	T0105	-0192	34544	2783				14415	722	215			001	300	065	780
	STD	0125	-0192	3455	2784	0002670			14418	724							
	STD	0150	-0191	3456	2784	0002580			14423	726							
157	OBS	0156	-0191	34562	2785				14424	727	224			000	298	066	761
	STD	0200	-0190	3457	2785	0002476			14432	718							
157	OBS	0207	-0190	34578	2786				14433	717	208			000	300	067	783
	STD	0250	-0193	3463	2790	0001977			14439	719							
	STD	0300	-0197	3467	2794	0001630			14446	721							
157	OBS	T0309	-0198	34681	2794				14448	721	208			000	298	065	781
	STD	0400	-0198	3470	2796	0001362			14463	719							
157	OBS	T0412	-0198	34680	27940				719	213				000	298	067	783
	STD	0500	-0190	3471	2797	0001203			14484	718							
157	OBS	T0504	-0189	34715	2797				14485	718	217			001	294	066	782

REF ID	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	ISOEN SQUARE		STATION TIME IGMT				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
					10"	1"	MO	DAY	HR.1/10	CRUISE NO.		STATION NUMBER	DIR.			HGT	PER	SEA		TYPE	AMT	
318085	GL	773855	042278W		556	72	03	02	085	1969		008	0585	06	00	0	X		X7	5	7	0011
					WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
					COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE			DRY BULB	WET BULB										
								15	519	931	-138	-140				5	12					
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ ρ DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	SCC					
		STD	0000	-0189						815												
	076	OBS	0000	-0189	35620	28700				815	199		008	289	065	753						
		STD	0010	-0189						746												
	076	OBS	0010	-0189	34430	27740				746	169		010	288	064	779						
		STD	0020	-0188						746												
		STD	0030	-0187	3440	2772	0003860		14402	746												
	076	OBS	0030	-0187	34404	2772			14402	746	203		010	283	063	782						
		STD	0050	-0189	3441	2772	0003804		14405	746												
	076	OBS	0056	-0190	34410	2772			14405	746	208		009	286	065	785						
		STD	0075	-0188	3441	2772	0003768		14410	745												
	076	OBS	0081	-0187	34413	2772			14411	744	209		009	288	064	785						
		STD	0100	-0187	3446	2776	0003386		14415	733												
		STD	0125	-0188	3451	2780	0002986		14419	723												
	076	OBS	0132	-0188	34517	2781			14421	721	216		003	291	065	784						
		STD	0150	-0190	3454	2783	0002736		14423	719												
	076	OBS	0182	-0192	34566	2785			14428	717	207		000	294	065	788						
		STD	0200	-0192	3457	2785	0002470		14431	719												
		STD	0250	-0193	3459	2787	0002285		14439	723												
	076	OBS	0283	-0193	34598	2788			14444	724	205		000	293	064	789						
		STD	0300	-0197	3461	2789	0002089		14446	723												
	076	OBS	T0383	-0211	34635	2791			14453	721	212		000	295	066	789						
		STD	0400	-0211	3464	2791	0001754		14456	721												
	076	OBS	T0483	-0213	34649	2792			14469	722	213		000	299	068	784						
		STD	0500	-0214	3465	2792	0001605		14472	720												
	076	OBS	T0546	-0215	34659	2793			14479	719	219		001	297	068	782						
	076	OBS	T0574	-0203	34683	2795			14489	721	226		002	294	067	783						

REFERENCE CTRY CODE	SHIP NO.	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDIC	ISOEN SQUARE		STATION TIME IGMT				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
						10"	1"	MO	DAY	HR.1/10	CRUISE NO.		STATION NUMBER	DIR.			HGT PER SEA	TYPE	AMT					
318085	GL		77542S	045133W		556	75	03	03	235	1969		009		0250	02	00	0	X		X7	5 8		0012
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB		WET BULB		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS						
									00	500	973	-106	-111	5	09									
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ ρ DYN. M. X 10 <sup>3</sup>		SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH					
		STD	0000	-0188	3450	2779	0003154		0000		14398		730											
	231	OBS	0000	-0188	34498	2779					14398		730	211			007	294	065	760				
		STD	0010	-0188	3449	2779	0003210		0003		14400		729											
	231	OBS	0016	-0188	34487	2778					14401		729	221			007	295	065	780				
		STD	0020	-0188	3449	2778	0003226		0006		14401		732											
		STD	0030	-0189	3449	2778	0003218		0010		14403		737											
	231	OBS	0031	-0189	34487	2778					14403		738	223			013	291	064	785				
		STD	0050	-0189	3448	2778	0003229		0016		14406		744											
	231	OBS	0056	-0189	34483	2778					14407		746	222			007	292	067	782				
		STD	0075	-0191	3449	2779	0003162		0024		14409		734											
	231	OBS	0081	-0192	34497	2779					14410		733	217			008	293	065	781				
		STD	0100	-0191	3450	2779	0003095		0032		14414		739											
	231	OBS	0106	-0190	34497	2779					14415		740	213			008	295	065	784				
		STD	0125	-0190	3450	2780	0003057		0040		14418		739											
		STD	0150	-0190	3450	2780	0003042		0047		14422		738											
	231	OBS	T0155	-0190	34501	2780					14423		737	222			007	294	064	788				
		STD	0200	-0193	3450	2780	0002974		0062		14430		729											
	231	OBS	T0207	-0193	34505	2780					14430		728	207			005	292	063	789				
	231	OBS	0247	-0195	34512	2781					14436		721	219			007	297	064	789				

REFERENCE		SHIP CODE	SNIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MOON PHASE	W. ROSEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH BOTTOM	MAX. DEPTH OF S'AMPLES	WAVE OBSERVATIONS				WEA- CODE	CLOUD COGIS		NOOD STATION NUMBER			
CRIP CODE	IG. NO.							MO	DAY	HR	MIN		SEC	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	ITN		AMT		
318085		GL		77500S	042052W		556	72	03	04	145	1969		010		0680	07	00	0	X		X7	5	6		0013	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS.		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. MT	DIR.	SPEED OR FORCE	UNIT		DRY BULB	WET BULB	8		13											
									16	513	999	-169	-171	8		13											



REFERENCE CITY CODE	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	OBS NO.	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPLES	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
								CRUISE NO.	STATION NUMBER			DIR	HGT PER	SEA		TYPE	AMT			
					10'	1"													MO	DAY
318085	GL	77189S	037423W	555	77	03 06	205	1969	012	1024	10	00	0	X	X4	5 8	0015			
				WATER		WIND		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS								
				COLOR CODE	TRANS. M	DIR.	SPEED OR FORCE	BARO- METER (mba)	DRY BULB	WET BULB	VIS. CODE									
								18	513	869	-157	-159	8	14						
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \theta$ DTM. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH	S C			
		STD	0000	-0187	3440	2771	0003902	0000	14398	780										
194		OBS	0000	-0187	34401	2771			14398	780	184				007	267	063 779			
		STD	0010	-0186	3434	2767	0004336	0004	14399	792										
194		OBS	0010	-0186	34344	2767			14399	792	183				006	266	063 789			
		STD	0020	-0185	3434	2767	0004347	0008	14401	785										
194		OBS	0020	-0185	34342	2767			14401	785	186				007	268	063 790			
		STD	0030	-0191	3434	2767	0004343	0013	14400	765										
194		OBS	0031	-0191	34338	2766			14400	764	191				007	269	063 790			
		STD	0050	-0185	3434	2766	0004351	0022	14406	786										
194		OBS	T0056	-0184	34339	2766			14407	789	194				007	274	062 790			
		STD	0075	-0190	3442	2773	0003702	0032	14409	755										
		STD	0100	-0195	3450	2780	0003060	0040	14412	727										
194		OBS	0110	-0196	34525	2782			14413	720	210				002	295	066 788			
		STD	0125	-0196	3453	2782	0002812	0047	14416	724										
		STD	0150	-0196	3455	2784	0002643	0054	14420	729										
194		OBS	T0163	-0196	34553	2784			14422	731	202				001	293	066 771			
		STD	0200	-0194	3457	2785	0002464	0067	14430	729										
		STD	0250	-0192	3458	2786	0002364	0079	14439	727										
194		OBS	0268	-0191	34586	2787			14443	726	209				001	293	066 785			
		STD	0300	-0191	3459	2787	0002260	0091	14448	723										
194		OBS	T0374	-0192	34599	2788			14460	720	204				001	293	065 788			
		STD	0400	-0195	3460	2788	0002111	0112	14463	722										
194		OBS	0478	-0199	34612	2789			14474	724	205				001	291	064 787			
		STD	0500	-0196	3462	2789	0001934	0133	14479	723										
194		OBS	0582	-0191	34625	2790			14496	718	212				000	292	065 786			
		STD	0600	-0194	3463	2790	0001768	0151	14497	718										
		STD	0700	-0205	3463	2790	0001664	0168	14509	716										
194		OBS	T0780	-0210	34644	2792			14520	714	215				001	295	068 786			
		STD	0800	-0210	3465	2792	0001439	0184	14524	714										
		STD	0900	-0208	3468	2794	0001189	0197	14542	711										
194		OBS	T0996	-0206	34700	2796			14559	709	213				001	299	070 789			
		STD	1000	-0206	3471	2797	0000874	0207	14560	710										
194		OBS	T1016	-0207	34760	2801			14563	716	209				000	301	072 790			

REFERENCE	SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	ACTION LEFT	1/2 DEGREE SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
					10"	1"	MO	DAY		HR./1/10	CRUISE NO.			STATION NUMBER	DIR	HGT		PER	SEA		TYPE	AMT			
318085	GL	77502S	035329W		555	75	03	07	085	1969		013	0347	03	00	0	X		X1	7 2		0016			
					WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
					COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB														
								18	510	791	-208	-211	8	11											
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$		$\Sigma \Delta \theta$ DTM. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH								
		STD	0000	-0187	3457	2785	0002588		0000	14400	738														
075		OBS	0000	-0187	34572	2785				14400	738	208				009	289	067	780						
075		OBS	0006	-0186	34420	2773				14399	736	205				006	288	066	791						
		STD	0010	-0185	3440	2771	0003908		0003	14400	745														
075		OBS	0014	-0184	34386	2770				14401	751	209				007	287	066	795						
		STD	0020	-0185	3438	2770	0004055		0007	14401	749														
		STD	0030	-0186	3437	2769	0004124		0011	14403	745														
075		OBS	0040	-0187	34365	2768				14404	742	211				007	283	067	751						
		STD	0050	-0187	3437	2769	0004140		0020	14406	737														
075		OBS	0066	-0186	34367	2769				14408	735	214				005	290	067	793						
		STD	0075	-0186	3437	2769	0004127		0030	14410	739														
075		OBS	0092	-0185	34365	2768				14413	744	214				007	290	067	753						
		STD	0100	-0185	3437	2768	0004121		0040	14415	742														
		STD	0125	-0184	3437	2768	0004107		0051	14419	738														
075		OBS	T0143	-0184	34365	2768				14422	736	214				006	291	067	792						
		STD	0150	-0184	3436	2768	0004100		0061	14423	736														
075		OBS	0194	-0184	34360	2768				14431	736	209				006	288	066	795						
		STD	0200	-0184	3436	2768	0004100		0081	14431	736														
		STD	0250	-0185	3436	2768	0004053		0102	14440	733														
		STD	0300	-0185	3436	2768	0004005		0122	14448	731														
075		OBS	T0300	-0185	34364	2768				14448	731	208				005	288	066	794						
075		OBS	T0322	-0183	34360	2768				14452	738	213				006	289	067	781						
075		OBS	T0343	-0184	34377	2769				14456	724	217				010	291	067	792						

REFERENCE	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH METER	WAVE SQUARE	STATION TIME (GMT)	YEAR	ORIGINATOR'S CRUISE NO.	STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS	WEA- THER CODE	CLOUD CODES	NODC STATION NUMBER
318085	GL	77502S	035329W	555	75	03 07 085	1969	013	0347	03	00	0 X	X1	0 3	0017

WATER	WIND	BARO- METER	AIR TEMP. °C	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB
DT	SD	18	S10	791	-208 -211 8

MESSNGR TIME HR 1/10	CAS- T NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\times 10^2$	$\Delta \sigma_t$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	S C
		STD	0000	-0188	3427	2761	0004899	0000	14395								
065		OBS	0000	-0188	34271	2761			14395								
		STD	0010	-0188	3428	2762	0004823	0005	14397								
		OBS	0010	-0188	34280	2762			14397								
000		STD	0020	-0187	3429	2762	0004750	0010	14399								
		OBS	0020	-0187	34289	2762			14399								
		OBS	0025	-0187	34289	2762			14400								
		STD	0030	-0187	3429	2762	0004743	0014	14401								
		OBS	0030	-0187	34289	2762			14401								
		STD	0050	-0187	3429	2762	0004723	0024	14404								
		OBS	0050	-0187	34290	2762			14404								
		STD	0075	-0187	3429	2762	0004707	0036	14408								
		OBS	0075	-0187	34290	2762			14408								
		STD	0100	-0187	3429	2762	0004683	0047	14413								
		OBS	0100	-0187	34291	2762			14413								
		STD	0125	-0187	3429	2763	0004660	0059	14417								
		OBS	0125	-0187	34292	2763			14417								
		STD	0150	-0187	3429	2763	0004636	0071	14421								
		OBS	0150	-0187	34293	2763			14421								
		STD	0200	-0186	3429	2763	0004607	0094	14430								
		OBS	0200	-0186	34293	2763			14430								
		STD	0250	-0186	3430	2763	0004560	0117	14438								
		OBS	0250	-0186	34295	2763			14438								
		STD	0300	-0186	3430	2763	0004491	0139	14446								
		OBS	0300	-0186	34300	2763			14446								
		OBS	0320	-0186	34309	2764			14450								

REFERENCE	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH METER	WAVE SQUARE	STATION TIME (GMT)	YEAR	ORIGINATOR'S CRUISE NO.	STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS	WEA- THER CODE	CLOUD CODES	NODC STATION NUMBER
318085	GL	77220S	034292W	555	74	03 07 140	1969	014	0370	04	00	0 X	X7	7 8	0018

WATER	WIND	BARO- METER	AIR TEMP. °C	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB
		21	S04	754	-115 -116 7

MESSNGR TIME HR 1/10	CAS- T NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\times 10^2$	$\Delta \sigma_t$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	S C
		STD	0000	-0183	3421	2756	0005363	0000	14397	772							
140		OBS	0000	-0183	34212	2756			14397	772	190		012	267	061	788	
		STD	0010	-0183	3421	2756	0005357	0005	14398	774							
140		OBS	0010	-0183	34212	2756			14398	774	189		011	270	062	791	
		STD	0020	-0185	3425	2759	0005055	0011	14400	759							
		STD	0030	-0186	3428	2762	0004814	0016	14401	749							
140		OBS	0036	-0187	34286	2762			14402	746	213		011	284	065	758	
		STD	0050	-0186	3428	2762	0004770	0025	14404	753							
140		OBS	0061	-0186	34283	2762			14406	754	206		011	284	067	789	
		STD	0075	-0186	3429	2762	0004709	0037	14409	744							
140		OBS	0087	-0186	34299	2763			14411	738	206		011	288	066	790	
		STD	0100	-0186	3430	2763	0004610	0049	14413	739							
		STD	0125	-0185	3431	2764	0004557	0060	14418	741							
140		OBS	T0136	-0185	34308	2764			14420	742	211		010	287	066	790	
		STD	0150	-0185	3431	2764	0004526	0071	14422	740							
140		OBS	T0191	-0186	34307	2764			14428	736	207		008	288	066	789	
		STD	0200	-0186	3431	2764	0004500	0094	14430	736							
		STD	0250	-0187	3431	2764	0004452	0116	14438	735							
140		OBS	0291	-0187	34310	2764			14445	732	209		009	291	066	790	
		STD	0300	-0185	3431	2764	0004387	0138	14447	731							
140		OBS	T0339	-0183	34332	2766			14455	725	207		012	296	067	790	
140		OBS	0366	-0187	34372	2769			14458	722	206		005	294	068	790	

REFERENCE CTRY CODE	SHIP NO.	SNIP CODE	LATITUDE 1°/10'	LONGITUDE 1°/10'	WAVE SQUARE 10' 1"	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER				
						MO	DAY		HR	10'			STATION NUMBER	DR.	HGT		PER	SEA		TYPE	AMT		
318085	GL		76529S	032497W	555	62	03	08	055	1969		015	0375	04	00	0	X		X7	X19		0019	
					WATER		WIND		AIR TEMP. °C				NO. OBS. DEPTH'S	SPECIAL OBSERVATIONS									
					COLOR CODE	TRANSL MIL	DR.	SPEED OR FORCE	SABO- METER (mb)	DRY RULE	WET RULE	VIS. CODE											
										22	518	733	-161	-162	4	05							
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Δ σ OTN, M, S 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>2</sub> -P pg - ml/l	TOTAL-P pg - ml/l	NO <sub>2</sub> -N pg - ml/l	NO <sub>3</sub> -N pg - ml/l	SiO <sub>4</sub> -Si pg - ml/l	pH	CO <sub>2</sub>						
		STD	0000	-0177	3399	2738	0007113	0000	14396	808													
	063	OBS	0000	-0177	33986	2738			14396	808	165			017	236	054	799						
		STD	0010	-0176	3397	2737	0007201	0007	14398	811													
	063	OBS	0010	-0176	33974	2737			14398	811	170			018	238	054	799						
		STD	0020	-0175	3403	2741	0006766	0014	14401	806													
		STD	0030	-0175	3408	2745	0006378	0021	14404	801													
		STD	0050	-0173	3418	2753	0005601	0033	14409	791													
	063	OBS	T0051	-0173	34184	2753			14410	790	192			014	263	058	797						
	063	OBS	0346	-0186	34377	2769			14455	731	219			003	290	069	790						
	063	OBS	T0372	-0184	34389	2770			14461	727	220			004	293	069	789						

REFERENCE CIR CODE	ID. NO.	SHIP CODE	LATITUDE +	LONGITUDE +	WAVE SQUARE	STATION TIME IGMT		YEAR	ORIGINATOR'S			DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE		CLOUD CODES		NOOC STATION NUMBER	
						10'	1"		CRUISE NO.	STATION NUMBER	DR.			HGT	PER	SEA	TYPE	AMT					
						MO	DAY												NET/10				
318085	GL		76529S	032497W	555	62	03	08	055	1969		015	0375	04	00	0	X		X7	03		0020	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH'S	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANSL. MIL	DR.	SPEED OR FORCE	DRY RULE	WET RULE												
						DT	SD	22	518	733	-161	-162	4					15					
MESSAGE TIME NR	1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Δ ρ OTN, M, R 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>2</sub> -P pg - ml/l	TOTAL-P pg - ml/l	NO <sub>2</sub> -N pg - ml/l	NO <sub>3</sub> -N pg - ml/l	SiO <sub>4</sub> -Si pg - ml/l	pH						
			STO	0000	-0178	3393	2733	0007542	0000	14395													
		050	OBS	0000	-0178	33930	2733			14395													
			STO	0010	-0178	3393	2733	0007535	0008	14397													
			OBS	0010	-0178	33930	2733			14397													
			STD	0020	-0181	3400	2739	0006983	0015	14398													
		000	OBS	0020	-0181	34000	2739			14398													
			OBS	0025	-0180	34071	2744			14400													
			STD	0030	-0178	3410	2747	0006216	0021	14402													
			OBS	0030	-0178	34100	2747			14402													
			STD	0050	-0171	3422	2756	0005338	0033	14411													
			OBS	0050	-0171	34215	2756			14411													
			STD	0075	-0182	3427	2761	0004888	0046	14410													
			OBS	0075	-0182	34268	2761			14410													
			STD	0100	-0185	3428	2761	0004788	0058	14413													
			OBS	0100	-0185	34278	2761			14413													
			STD	0125	-0186	3429	2762	0004670	0070	14417													
			OBS	0125	-0186	34291	2762			14417													
			STD	0150	-0186	3430	2763	0004570	0081	14421													
			OBS	0150	-0186	34302	2763			14421													
			OBS	0176	-0183	34310	2764			14427													
			STD	0200	-0187	3432	2765	0004398	0104	14430													
			OBS	0200	-0187	34320	2765			14430													
			STD	0250	-0187	3433	2766	0004282	0125	14438													
			OBS	0250	-0187	34331	2766			14438													
			STD	0300	-0187	3434	2767	0004167	0146	14446													
			OBS	0300	-0187	34342	2767			14446													
			OBS	0352	-0187	34348	2767			14455													

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	TIME INDICATOR	15 DEGREE SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPLE'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR	HGT		PER	SEA		TYPE	AMT
						WATER		WIND			BARO- METER				AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS	SPECIAL OBSERVATIONS			
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbars)	(mbars)	DRY BULB	WET BULB														
						21	S11	886	-175	-181	8	12											
MESSNGR TIME HR 1/10	CA. I NO.	CTRO TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ O DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ml/l}$	TOTAL-P $\mu\text{g} - \text{ml/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ml/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ml/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ml/l}$	pH	3 CUU						
		STD	0000	-0170	3409	2746	0006339	0000	14401	795													
056		OBS	0000	-0170	34089	2746			14401	795	167		015	241	055	801							
		STD	0010	-0168	3408	2745	0006376	0006	14404	793													
056		OBS	0010	-0168	34084	2745			14404	793	173		014	243	054	798							
		STD	0020	-0168	3409	2745	0006361	0013	14405	794													
056		OBS	0025		34085				795	168			015	243	054	796							
		STD	0030	-0169	3412	2748	0006086	0019	14407	787													
		STD	0050	-0169	3422	2756	0005305	0030	14412	758													
056		OBS	0051	-0169	34223	2757			14412	757	193		012	285	060	792							
		STD	0075	-0175	3428	2761	0004798	0043	14414	743													
		STD	0100	-0182	3434	2767	0004299	0054	14416	728													
056		OBS	T0102	-0182	34348	2767			14416	727	206		008	293	065	790							
		STD	0125	-0182	3435	2767	0004230	0065	14420	734													
035		OBS	0146	-0181	34361	2768			14424	740	211		002		066	788							
		STD	0150	-0181	3436	2768	0004109	0075	14425	727													
056		OBS	0152	-0181	34366	2768			14425	722	200		000	296	067	786							
035		OBS	0194	-0178	34368	2769			14433	722	205		002	294	068	786							
		STD	0200	-0174	3437	2769	0004053	0096	14436	720													
		STD	0250	-0140	3438	2768	0004064	0116	14461	707													
035		OBS	0292		34405				695	203			000	295	076	786							
		STD	0300	-0108	3442	2771	0003863	0136	14485	683													
035		OBS	T0390	-0050	34540	2778			14528	573	220		001	308	089	780							
		STD	0400	-0019	3457	2779	0003143	0171	14545	540													
035		OBS	T0494	0014	34663	2785			14577	502	231		002	312	103	779							
		STD	0500	0000	3466	2785	0002568	0200	14571	516													
035		OBS	T0509	-0024	34645	2785			14562	542	229		002	309	099	780							

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	15 DEGREE SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPLE'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR	HGT		PER	SEA		TYPE
318085	GL		74400S	031041W		555	41	03	09	030	1969	016	0534	05	00	0	X		X7	0	3	0022
						WATER		WIND		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	BARO- METER (mbars)		DRY BULB	WET BULB													
		DT	SD	21	S11	871	-182	-183	16													
MESSNGR TIME HR 1/10	CA. I NO.	CTRO TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ O DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ml/l}$	TOTAL-P $\mu\text{g} - \text{ml/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ml/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ml/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ml/l}$	pH	3 CUU					
		STD	0000	-0186	3402	2741	0006824	0000	14393													
030		OBS	0000	-0186	34021	2741			14393													
		OBS	0008	-0182	34062	2744			14396													
		STD	0010	-0184	3406	2744	0006492	0007	14396													
000		OBS	0010	-0184	34064	2744			14396													
		STD	0020	-0187	3421	2756	0005341	0013	14398													
		OBS	0020	-0187	34212	2756			14398													
		OBS	0025	-0186	34260	2760			14400													
		STD	0030	-0178	3428	2761	0004841	0018	14405													
		OBS	0030	-0178	34279	2761			14405													
		STD	0050	-0185	3432	2765	0004497	0027	14406													
		OBS	0050	-0185	34320	2765			14406													
		STD	0075	-0187	3434	2766	0004323	0038	14409													
		OBS	0075	-0187	34340	2766			14409													
		STD	0100	-0188	3435	2767	0004220	0049	14413													
		OBS	0100	-0188	34351	2767			14413													
		STD	0125	-0188	3436	2768	0004128	0059	14417													
		OBS	0125	-0188	34361	2768			14417													
		STD	0150	-0188	3437	2769	0004059	0069	14421													
		OBS	0150	-0188	34368	2769			14421													
		STD	0200	-0188	3438	2770	0003913	0089	14430													
		OBS	0200	-0188	34383	2770			14430													
		STD	0250	-0184	3440	2771	0003756	0108	14440													
		OBS	0250	-0184	34401	2771			14440													
		STD	0300	-0157	3446	2775	0003367	0126	14462													
		OBS	0300	-0157	34460	2775			14462													
		STD	0400	-0054	3461	2784	0002632	0156	14529													
		OBS	0400	-0054	34612	2784			14529													
		OBS	0488	-0013	34644	2785			14563													



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPT INCH	1/2 RS DEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS		WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER			
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.					HGT PER SEA	TYPE	AMT
318085	GL		74187S	032282W	555	42	03	09	145	1969	017		0620	06	00	0	X	X7	5	8	0023		
		WATER		WIND		BARO- METER (mb)		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS									
		COLOR CODE	TRANS. INCH	DIR.	SPEED OR FORCE			DRY BULB		WET BULB													
				27	S04	921		-176		-178		7		12									
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	CTD						
		STD	0000	-0167	3407	2744	0006484	0000	14402	796													
164		OBS	0000	-0167	34071	2744			14402	796	218		001	291	065	802							
		STD	0010	-0170	3406	2743	0006547	0007	14402	794													
164		OBS	0010	-0170	34061	2743			14402	794	235		001	294	068	801							
		STD	0020	-0170	3407	2744	0006510	0013	14404	793													
164		OBS	0020	-0170	34068	2744			14405	792	234		000	295	070	800							
		STD	0030	-0169	3410	2747	0006237	0019	14407	786													
		STD	0050	-0165	3427	2760	0004931	0031	14414	751													
164		OBS	0052	-0165	34278	2761			14415	748	229		001	299	080	771							
		STD	0075	-0173	3432	2765	0004512	0042	14415	735													
		STD	0100	-0179	3436	2768	0004175	0053	14417	725													
164		OBS	0104	-0180	34363	2768			14418	724	261		003	316	110	792							
		STD	0125	-0181	3437	2769	0004077	0064	14421	722													
		STD	0150	-0183	3437	2769	0004058	0074	14424	720													
148		OBS	0171	-0184	34375	2769			14427	719	237		002	303	091	781							
		STD	0200	-0183	3438	2770	0003949	0094	14432	719													
164		OBS	0210	-0183	34381	2770			14434	719	181		015	240	058	790							
		STD	0250	-0181	3438	2770	0003926	0113	14442	718													
148		OBS	0273	-0180	34378	2769			14446	717	186		014	240	057	788							
		STD	0300	-0178	3438	2770	0003905	0133	14451	714													
148		OBS	0377	-0173	34401	2771			14467	705	182		014	242	057	788							
		STD	0400	-0164	3442	2772	0003593	0171	14475	695													
148		OBS	0476	-0105	34482	2776			14516	632	205		015	272	064	784							
		STD	0500	-0039	3450	2774	0003544	0206	14551	546													
148		OBS	0574	0040	3467P	2784P			14596	480	218		014	286	068	780							
		STD	0600	0022	3454	2774	0003614	0242	14596	528													
148		OBS	0616	0000	34542	2776			14589	576	213		000	293	069	783							

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH INCHES	1/2 RS DEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS		WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.					HGT PER SEA
318085	GL		74187S	032282W	555	42	03	09	145	1969	017		0620	06	00	0	X	X7	0	3	0024
		WATER		WIND		BARO- METER (mb)		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS							
		COLOR CODE	TRANS. INCH	DIR.	SPEED OR FORCE			DRY BULB		WET BULB											
		DT	SD	27	S04	921		-176		-178		7		17							
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	CTD				
		STD	0000	-0181	3405	2743	0006628	0000	14395												
143		OBS	0000	-0181	34048	2743			14395												
		STD	0010	-0176	3405	2743	0006617	0007	14399												
		OBS	0010	-0176	34050	2743			14399												
		STD	0020	-0173	3409	2746	0006311	0013	14403												
001		OBS	0020	-0173	34090	2746			14403												
		OBS	0025	-0163	34150	2750			14409												
		STD	0030	-0163	3421	2755	0005402	0019	14411												
		OBS	0030	-0163	34211	2755			14411												
		STD	0050	-0182	3435	2767	0004305	0029	14407												
		OBS	0050	-0182	34346	2767			14407												
		STD	0075	-0186	3437	2769	0004111	0039	14410												
		OBS	0075	-0186	34368	2769			14410												
		STD	0100	-0187	3438	2769	0004024	0049	14414												
		OBS	0100	-0187	34377	2769			14414												
		STD	0125	-0188	3438	2770	0003990	0059	14417												
		OBS	0125	-0188	34379	2770			14417												
		STD	0150	-0188	3438	2770	0003944	0069	14422												
		OBS	0150	-0188	34383	2770			14422												
		STD	0200	-0188	3439	2770	0003874	0089	14430												
		OBS	0200	-0188	34388	2770			14430												
		STD	0250	-0182	3439	2771	0003831	0108	14441												
		OBS	0250	-0182	34392	2771			14441												
		STD	0300	-0183	3440	2771	0003737	0127	14449												
		OBS	0300	-0183	34400	2771			14449												
		STD	0400	-0142	3448	2777	0003223	0162	14486												
		OBS	0400	-0142	34480	2777			14486												
		STD	0500	-0008	3463	2783	0002775	0192	14567												
		OBS	0500	-0008	34626	2783			14567												
		STD	0600	0037	3471	2787	0002460	0218	14605												
		OBS	0600	0037	34707	2787			14605												
		OBS	0610	0037	34706	2787			14607												



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DATE MO DAY HR 1/10	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER
CTRY CODE	IO. NO.					10°	1°		CRUISE NO.	STATION NUMBER			DIR.	HGT.	PER		TYPE	AMT	

318085	GL	74063S	032362W	555	42	03	11	205	1969	019	1500	15	00	0	X		X1	4	5	0025
--------	----	--------	---------	-----	----	----	----	-----	------	-----	------	----	----	---	---	--	----	---	---	------

WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			

			19	S07	896	-163	-167	8	16	
--	--	--	----	-----	-----	------	------	---	----	--

MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	D <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>2</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C
		STD	0000	-0177	3411	2748	0006145	0000	14398	807							
191		OBS	0000	-0177	34112	2748			14398	807	155		024	243	055	800	
		STD	0010	-0182	3411	2748	0006158	0006	14397	808							
191		OBS	0010	-0182	34108	2748			14397	808	169		015	245	055	798	
		STD	0020	-0184	3411	2748	0006132	0012	14398	814							
191		OBS	0026	-0185	34121	2749			14399	817	158		013	246	054	799	
		STD	0030	-0184	3416	2752	0005740	0018	14400	802							
		STD	0050	-0181	3430	2763	0004660	0029	14407	748							
191		OBS	0052	-0181	34313	2764			14408	745	200		014	289	065	791	
		STD	0075	-0184	3433	2766	0004408	0040	14410	735							
191		OBS	0077	-0184	34332	2766			14411	734	200		009	287	066	791	
		STD	0100	-0184	3434	2766	0004315	0051	14415	733							
		STD	0125	-0184	3434	2766	0004300	0062	14419	731							
191		OBS	0129	-0184	34343	2767			14420	731	204		003	293	066	789	
		STD	0150	-0184	3434	2767	0004255	0072	14423	728							
191		OBS	0181	-0183	34345	2767			14429	725	205		000	294	067	789	
		STD	0200	-0183	3435	2767	0004180	0093	14432	724							
		STD	0250	-0183	3436	2768	0004073	0114	14440	721							
191		OBS	T0282	-0184	34362	2768			14445		204		001	297	068	789	
		STD	0300	-0185	3437	2768	0003999	0134	14448	718							
191		OBS	0388	-0188	34382	2770			14461	712	196		000	298	068	785	
		STD	0400	-0173	3439	2770	0003789	0173	14470	699							
191		OBS	0491	-0080	34465	2773			14530	609	217		000	308	080	782	
		STD	0500	-0073	3448	2774	0003508	0210	14535	601							
191		OBS	T0593	-0011	34578	2779			14581	535	226		000	311	093	779	
		STD	0600	-0010	3458	2779	0003104	0243	14582	534							
		STD	0700	0011	3463	2782	0002859	0273	14609	513							
		STD	0800	0031	3466	2784	0002780	0301	14636	492							
		STD	0900	0052	3468	2784	0002794	0329	14662	471							
191		OBS	T0906	0053	34682	2784			14663	470	227		000	313	110	780	
		STD	1000	0049	3468	2784	0002779	0356	14677	473							
		STD	1100	0044	3468	2784	0002745	0384	14692	476							
191		OBS	1113	0043	34678	2784			14694	476	229		012	318	120	779	
		STD	1200	0035	3468	2785	0002689	0411	14705	500							
		STD	1300	0026	3468	2785	0002608	0438	14718	527							
191		OBS	T1368	0022	3449P	2770P			546	203			003	300	077	781	
		STD	1400	0019	3468	2786	0002548	0464	14731	529							
191		OBS	1466	0017	34679	2786			14742	497	237		001	321	121	780	
191		OBS	T1492	0017	34681	2786			14746	485	226		000	320	122	779	

REFERENCE CRUISE CODE	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH METER	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER	
					STATION TIME (GMT)			CRUISE NO.	STATION NUMBER			DIR.	HGT PER	SEA		TYPE	AMT		
					10"	1"													MO
318085	GL	73494S	031409W	555	31	03	12	115	1969		020	2360	24	00	0	X			0026
					WATER		WIND		BARO- METER (mb)		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS				
COLOR CODE		TRANS. UNIT	DIR.	SPEED OR FORCE	DRY BULB		WET BULB												
					16		S05		903		-147		-150		8		25		
MESSNGR TIME NR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANDALTY-2107		Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C C	
		STD	0000	-0239	3405	2744			0006530	0000	14368	805							
117		OBS	0000	-0239	34047	2744					14368	805	160		014	234	053	792	
		STD	0010	-0170	3404	2742			0006678	0007	14402	809			012	237	043	796	
117		OBS	0010	-0170	34044	2742					14402	809	151						
		STD	0020	-0169	3405	2742			0006659	0013	14404	808			012	236	052	798	
117		OBS	0026	-0168	34047	2742					14406	808	156						
		STD	0030	-0171	3411	2747			0006156	0020	14406	792							
		STD	0050	-0181	3432	2765			0004507	0030	14408	737							
117		OBS	0052	-0182	34334	2766					14408	734	206		017	288	065	790	
		STD	0075	-0184	3434	2766			0004331	0041	14411	731							
117		OBS	0078	-0184	34342	2767					14411	730	202		003	292	066	789	
		STD	0100	-0183	3436	2768			0004194	0052	14415	732							
117		OBS	0104	-0183	34358	2768					14416	732	213		002	293	067	788	
		STD	0125	-0183	3436	2768			0004165	0062	14420	730							
		STD	0150	-0182	3436	2768			0004144	0073	14424	727							
117		OBS	0156	-0182	34359	2768					14425	726	199		000	301	067	789	
		STD	0200	-0182	3437	2769			0004029	0093	14433	720							
117		OBS	T0208	-0182	34373	2769					14434	719	205		000	295	068	789	
		STD	0250	-0180	3438	2769			0003959	0113	14442	718							
		STD	0300	-0178	3438	2770			0003905	0133	14451	717							
117		OBS	T0306	-0178	34380	2769					14452	717	208		000	294	068	789	
		STD	0400	-0145	3440	2770			0003819	0172	14484	673							
117		OBS	T0405	-0142	34407	2771					14486	670	210		000	293	073	788	
		STD	0500	-0051	3452	2776			0003325	0207	14546	579							
117		OBS	0510	-0043	34529	2777					14551	571	223		000	312	088	779	
		STD	0600	0009	3461	2781			0002999	0239	14591	520							
117		OBS	0610	0014	34616	2781					14595	515	224		000	315	097	780	
		STD	0700	0037	3465	2783			0002878	0268	14621	491							
		STD	0800	0054	3469	2785			0002712	0296	14646	464							
117		OBS	0810		34696						14658	461	222		000	321	106	779	
150		OBS	T0858	0059	34692	2785					14658	468	221		000	322	119	786	
		STD	0900	0059	3469	2785			0002751	0324	14665	468							
		STD	1000	0058	3470	2785			0002727	0351	14682	468							
117		OBS	T1006	0058	34697	2785					14683	468	216		000	325	115	779	
150		OBS	T1059	0052	34694	2785					14689	513	221		000	322	115	781	
		STD	1100	0048	3469	2785			0002682	0378	14694	505							
		STD	1200	0041	3469	2785			0002659	0405	14708	487							
117		OBS	T1256	0038	34687	2785					14716	476	217		000	322	118	780	
		STD	1300	0036	3469	2786			0002617	0431	14722	502							
150		OBS	1312	0036	34693	2786					14724	508	232		000	322	119	781	
		STD	1400	0029	3469	2786			0002562	0457	14736	513							
		STD	1500	0022	3469	2786			0002531	0482	14750	519							
150		OBS	1566	0018	34682	2786					14759	522	233		000	325	122	780	
		STD	1750	0012	3468	2786			0002474	0545	14788	529							
150		OBS	1872	0008	34676	2786					14807	533	233		000	322	122	780	
		STD	2000	0004	3468	2786			0002425	0606	14827	516							
150		OBS	T2068	0002	34675	2786					14838	515	222		000	322	122	782	
150		OBS	T2172	-0001	34674	2786					14854	524	227		000	322	120	782	
150		OBS	2281	-0004	34678	2787					14872	524	236		000	324	122	781	
150		OBS	T2332	-0008	34668	2786					14878	524	213		000	322	124	781	
150		OBS	T2358	-0010	34694	2788					14882	520	219		000	322	126	783	

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DATE MO DAY	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPLE	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER	
CRUISE NO.	ID. NO.					10"	1"		MO	DAY			HR./10	CRUISE NO.	STATION NUMBER		DIR.	HGT.		PER
318	0085	GL	73290S	030241W	555	30	03	14	055	1969	022	3109	31	31	0	2	X2	7	8	0027

318085 GL 73290S 030241W 555 30 03 14 055 1969 022 3109 31 31 0 2 X2 7 8 0027

WATER		WIND		BARO- METER (mbars)	AIR TEMP. °C		VIL CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB			

31 S10 893 -050 -058 8 24

MESSAGE TIME HR 1/10	CAS- T NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ D DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH	S C
		STD	0000	-0151	3405	2742		0006725	0000	14410	799						
056		OBS	0000	-0151	34045	2742				14410	799	137		013	219	052	797
		STD	0010	-0150	3404	2741		0006783	0007	14412	804						
056		OBS	0010	-0150	34037	2741				14412	804	145		013	216	051	800
		STD	0020	-0141	3405	2742		0006703	0013	14418	813						
056		OBS	0025	-0136	34057	2742				14421	815	147		013	218	052	801
		STD	0030	-0128	3407	2743		0006583	0020	14426	815						
		STD	0050	-0112	3414	2748		0006066	0033	14437	805						
056		OBS	0050	-0112	34143	2748				14437	805	203		010	241	054	800
		STD	0075	-0154	3428	2761		0004872	0046	14424	756						
		STD	0100	-0179	3436	2768		0004183	0058	14417	726						
056		OBS	0100	-0179	34359	2768				14417	726	199		025	294	067	790
		STD	0125	-0179	3437	2769		0004083	0068	14422	724						
		STD	0150	-0180	3437	2769		0004058	0078	14425	722						
056		OBS	0150	-0180	34371	2769				14425	722	201		000	298	068	789
		STD	0200	-0183	3438	2769		0003989	0098	14432	716						
056		OBS	T0203	-0183	34375	2769				14433	716	201		000	293	067	790
		STD	0250	-0182	3438	2770		0003923	0118	14441	715						
		STD	0300	-0181	3439	2770		0003858	0138	14450	714						
056		OBS	0300	-0181	34385	2770				14450	714	204		000	300	068	789
056		OBS	T0399	-0164	34403	2771				14475	686	201		000	298	070	789
		STD	0400	-0163	3440	2771		0003719	0176	14475	685						
056		OBS	T0499	-0109	34470	2775				14518	622	207		000	304	078	788
		STD	0500	-0108	3447	2775		0003400	0211	14519	621						
		STD	0600	-0017	3454	2777		0003329	0245	14579	545						
		STD	0700	0043	3462	2779		0003192	0277	14624	492						
056		OBS	T0797	0070	34687	2783				14653	463	204		000	307	104	782
		STD	0800	0070	3469	2784		0002852	0308	14653	463						
		STD	0900	0063	3469	2784		0002809	0336	14667	458						
087		OBS	T0920	0062	34692	2784				14670	457	222		000	320	110	782
		STD	1000	0060	3470	2785		0002750	0364	14683	461						
056		OBS	1000	0060	34696	2785				14683	461	230		000	319	111	780
		STD	1100	0053	3469	2785		0002739	0391	14696	466						
087		OBS	T1111	0052	34690	2785				14698	466	221		000	321	116	781
		STD	1200	0045	3469	2785		0002686	0418	14709	469						
056		OBS	T1250	0042	34690	2785				14717	470	230		000	321	117	781
		STD	1300	0039	3469	2785		0002677	0445	14724	467						
087		OBS	1310	0038	34684	2785				14725	466	221		000	321	118	781
		STD	1400	0033	3468	2785		0002639	0472	14738	473						
		STD	1500	0027	3468	2785		0002602	0498	14752	480						
087		OBS	1510	0026	34681	2786				14753	481	223		000	323	121	783
		STD	1750	0025	3468	2786		0002599	0563	14794	496						
087		OBS	1811	0022	34678	2786				14803	499	224		000	320	122	786
		STD	2000	0005	3467	2786		0002472	0626	14827	506						
087		OBS	T2013	0004	34669	2786				14829	507	227		000	321	123	782
087		OBS	T2216	-0001	34663	2786				14862	519	226		000	321	120	783
		STD	2500	-0008	3466	2786		0002353	0747	14907	527						
087		OBS	2524	-0009	34664	2786				14911	528	224		000	321	119	788
087		OBS	2837	-00140	34661	27860				523	219			001	313	118	789
		STD	3000	-0009	3466	2786		0002338	0864	14994	537						
087		OBS	T3056	-0017	34658	2786				15000	538	222		000	319	121	788
087		OBS	T3093	-0023	34650	27860				538							

REFERENCE		SHIP CODE	LATITUDE 1°10'	LONGITUDE 1°10'	CHIT INDIC	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPLE	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER			
CTRY CODE	ID. NO.					10°	1°		MD	DAY			HR.1/10	CRUISE NO.	STATION NUMBER	DIR.		HGT	PER		SEA	TYPE	AMT
318085	GL		72475S	030283W		555	20	03	15	025	1969		023	3658	35	00	0	X		X8	7 8		0028
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. DPS. DEPTHS	SPECIAL OBSERVATIONS											
CDLR CODE	TRANS. CODE	DIR.	SPEED OR FORCE	DRY BULB	WET BULB																		
			05	S13	846	-036	-047	7	27														
MESSAGE TIME HR. 1/10	CA. T NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	D <sub>2</sub> ml/l	PD <sub>2</sub> -P $\mu g - \sigma_t/l$	TOTAL-P $\mu g - \sigma_t/l$	NO <sub>2</sub> -N $\mu g - \sigma_t/l$	NO <sub>3</sub> -N $\mu g - \sigma_t/l$	SIO <sub>4</sub> -Si $\mu g - \sigma_t/l$	pH	S CC						
		STD	0000	-0161	3388	2729	0007966	0000	14402	829													
003		OBS	0000	-0161	33880	2729			14402	829	113		013	200	050	799							
003		OBS	0008	-0164	33879	2729			14402	828	121		013	196	050	802							
		STD	0010	-0160	3388	2728	0007962	0008	14405	828													
		STD	0020	-0142	3389	2729	0007927	0016	14415	825													
003		OBS	0021	-0140	33898	2729			14416	825	127		013	202	050	801							
		STD	0030	-0116	3399	2736	0007234	0023	14430	809													
003		OBS	0042	-0100	34102	2745			14441	788	167		013	247	057	799							
		STD	0050	-0120	3417	2751	0005833	0037	14434	773													
		STD	0075	-0166	3433	2765	0004455	0049	14419	738													
003		OBS	0084	-0176	34361	2768			14416	729	213		022	282	067	789							
		STD	0100	-0177	3437	2769	0004103	0060	14418	722													
		STD	0125	-0179	3438	2769	0004029	0070	14422	715													
003		OBS	0125	-0179	34377	2769			14422	715	201		021	296	069	789							
		STD	0150	-0180	3438	2770	0003988	0080	14425	715													
003		OBS	T0167	-0181	34384	2770			14428	715	201		004	299	070	789							
		STD	0200	-0179	3439	2770	0003884	0100	14434	704													
003		OBS	0244	-0177	34404	2771			14443	686	214		002	301	074	789							
		STD	0250	-0176	3441	2772	0003735	0119	14444	686													
		STD	0300	-0154	3443	2773	0003591	0137	14463	667													
003		OBS	T0323	-0133	34443	2773			14477	648	205		002	300	079	786							
		STD	0400	-0012	3456	2778	0003259	0172	14548	538													
003		OBS	0405	-0006	34569	2778			14551	532	214		001	297	095	781							
		STD	0500	0036	3463	2781	0003028	0203	14587	495													
		STD	0600	0063	3468	2783	0002849	0232	14617	469													
003		OBS	T0663	0072	34695	2784			14632	458	220		001	297	111	779							
		STD	0700	0069	3470	2784	0002793	0261	14636	457													
		STD	0800	0062	3470	2785	0002752	0288	14650	455													
003		OBS	T0843	0060	34695	2785			14656	454	220		000	299	116	779							
035		OBS	T0880	0059	34701	2785			14662	461	214		000	310	115	779							
		STD	0900	0055	3470	2785	0002669	0315	14664	463													
		STD	1000	0043	3470	2786	0002581	0342	14675	469													
003		OBS	T1079	0042	34697	2786			14688	472	226		000	318	117	779							
		STD	1100	0043	3470	2786	0002617	0368	14692	473													
035		OBS	T1120	0044	34695	2786			14696	473	215		000	316	120	778							
		STD	1200	0039	3469	2786	0002612	0394	14707	476													
		STD	1300	0033	3469	2786	0002580	0420	14721	481													
035		OBS	1360	0029	34690	2786			14729	484	215		000	313	127	779							
		STD	1400	0027	3469	2786	0002537	0445	14735	488													
		STD	1500	0021	3469	2787	0002485	0471	14749	496													
035		OBS	1650	0014	34688	2787			14772	503	216		000	314	124	778							
		STD	1750	0011	3468	2786	0002464	0532	14787	504													
035		OBS	1864	0007	34676	2786			14805	505	217		000	312	124	779							
		STD	2000	0001	3468	2787	0002380	0593	14826	512													
035		OBS	2040	0000	34677	2787			14832	514	216		000	315	122	779							
035		OBS	T2334	-0009	34675	2787			14878	526	216		000	316	124	775							
		STD	2500	-0012	3467	2787	0002244	0709	14906	532													
035		OBS	T2636	-0014	34671	2787			14928	535	215		000	315	125	779							
035		OBS	2834	-0017	34670	2787			14961	538	216		000	311	121	779							
		STD	3000	-0018	3467	2787	0002159	0819	14990	541													
035		OBS	3036	-0018	34668	2787			14996	542	213		000	314	122	779							
035		OBS	3238	-0023	34643	2785			15029	548	215		000	315	123	779							
035		OBS	3441	-0023	34666	2787			15065	555	214		000	314	122	779							
035		OBS	T3475	-0024	34664	2787			15071	553	213		001	311	123	779							
035		OBS	T3500	-0023	34665	2787			15076	546	211		000	314	121	780							

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	ROSEN SQUARE 10" 1"	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SPL'S	WAVE OBSERVATIONS				WEA- TH-ER CODE	CLOUD CODES		NOOC STATION NUMBER
CITY CODE	ID. NO.					MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE	
318085	GL	713615	030361W	555	10 03 16 025	1969		024	3848	35 00	0 X				X1	7 7		0029		



REFERENCE	IO. NO.	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT METER	2500N SQUARE		TATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER		
						10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DR.	HGT		PER	SEA		TYPE	AMT
318085		GL	703885	033323W		555	03	03	17	056	1969	025	4297	34	00	0	X		X7	X	9	0030	
						WATER		WIND		BARO- METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. m	DIR.	SPEED OR FORCE		DRY BULB	WET BULB											
								17	506		878	-056					-067	4	21				
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ O OYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>3</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S						
		STD	0000	-0183	3400	2739	0006992	0000	14394	812													
068		OBS	0000	-0183	34000	2739			14394	812	148		009	257	066	800							
		STD	0010	-0183	3399	2738	0007032	0007	14395	813													
068		OBS	0010	-0183	33994	2738			14395	813	160		010	252	066	799							
		STD	0020	-0184	3399	2738	0007022	0014	14396	813													
068		OBS	0027	-0185	33994	2738			14397	813	157		009	258	066	799							
		STD	0030	-0184	3405	2743	0006586	0021	14399	796													
		STD	0050	-0177	3437	2769	0004133	0032	14410	704													
068		OBS	0053	-0176	34405	2771			14412	694	195		005	287	076	790							
		STD	0075	-0178	3442	2773	0003733	0041	14415	686													
		STD	0100	-0180	3443	2774	0003637	0051	14418	676													
068		OBS	0106	-0180	34432	2774			14419	674	203		004	290	078	790							
		STD	0125	-0174	3443	2774	0003621	0060	14425	667													
		STD	0150	-0167	3443	2773	0003621	0069	14432	657													
068		OBS	0159	-0164	34433	2773			14435	654	194		000	296	079	789							
		STD	0200	-0078	3452	2778	0003264	0086	14483	580													
068		OBS	0212	-0057	34536	2778			14495	562	214		000	321	090	784							
		STD	0250	-0008	3459	2780	0003068	0102	14525	522													
		STD	0300	0038	3465	2782	0002881	0117	14555	484													
068		OBS	T0317	0050	34659	2782			14564	475	223		000	311	101	780							
		STD	0400	0070	3469	2784	0002798	0145	14587	461													
068		OBS	0421	0072	34692	2784			14591	459	219		000	314	107	781							
		STD	0500	0069	3470	2784	0002759	0173	14603	460													
068		OBS	T0531	0068	34698	2784			14608	460	243		000	322	112	780							
		STD	0600	0064	3470	2785	0002728	0200	14617	461													
		STD	0700	0057	3470	2785	0002703	0227	14631	461													
		STD	0800	0051	3469	2785	0002681	0254	14645	462													
068		OBS	T0835	0049	34692	2785			14650	462	227		000	326	117	781							
		STD	0900	0045	3469	2785	0002665	0281	14659	465													
		STD	1000	0038	3469	2786	0002615	0307	14673	470													
068		OBS	T1042	0036	34684	2785			14679	472	228		000	327	119	781							
		STD	1100	0033	3468	2785	0002654	0334	14687	473													
		STD	1200	0028	3468	2785	0002615	0360	14702	476													
		STD	1300	0023	3468	2786	0002575	0386	14716	480													
045		OBS	T1321	0022	34679	2786			14719	481	227		000	319	116	781							
		STD	1400	0018	3468	2786	0002554	0412	14731	487													
		STD	1500	0014	3468	2786	0002533	0437	14746	494													
045		OBS	T1561	0011	34674	2786			14755	498	227		000	324	117	781							
		STD	1750	0003	3467	2786	0002462	0500	14784	503													
045		OBS	1877	-0002	34665	2786			14803	508	224		000	311	123	780							
		STD	2000	-0007	3466	2786	0002403	0560	14822	515													
045		OBS	2080	-0009	34662	2786			14834	519	228		000	314	124	779							
045		OBS	2284	-0013	34671	2787			14868	526	221		000	314	123	779							
		STD	2500	-0017	3467	2787	0002210	0676	14903	530													
045		OBS	2589	-0019	34668	2787			14918	533	225		000	313	121	782							
045		OBS	T2778	-0022	34661	2786			14949	541	225		000	313	123	780							
		STD	3000	-0025	3466	2787	0002137	0784	14987	553													
045		OBS	3097	-0026	34661	2787			15003	555	227		004	309	122	779							
045		OBS	T3402	-0028	34659	2787			15056	552	224		000	311	120	781							

REFERENCE CITY CODE	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DATE INDICATOR	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
					10°	1°	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT
318085	GL	68368S	032036W	519	82	03	18	055	1969		026	4483	11	00	0	X		X2	7	8		0031
					WIND				AIR TEMP. °C													
					COLD- DRY CODE		TRANS. (mi)	DIR.	SPEED OR FORCE	BARO- METER (mba)	DRY BULB		WET BULB		VIS. CODE	NO. OBS. DEPTHS		SPECIAL OBSERVATIONS				
								10	506	842	-023	-039	7	13								

REF ID	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	TIME HR 1/10	1/2 SDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
					10"	1'	MD	DAT	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
					COLOR CODE	TRANS. (MI)	DIR.	SPEED OR FORCE	BARO- METER (mba)		AIR TEMP. °C				VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
318085	GL	645065	041247W	520 41 03 20 145 1969							027		4572	22	26	0 5			X9	6 5			0032
					WATER		WIND		BARO- METER		AIR TEMP. °C		VIS.		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS						
					COLOR CODE	TRANS. (MI)	DIR.	SPEED OR FORCE	BARO- METER (mba)		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS						
									26	505	925	-009	-012	8	14								
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Δσ <sub>t</sub> DYN. Δσ <sub>t</sub> x 10 <sup>3</sup>	SOUND VELOCITY	D <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - o/l	TOTAL-P μg - o/l	NO <sub>2</sub> -N μg - o/l	NO <sub>3</sub> -N μg - o/l	Si O <sub>4</sub> -Si μg - o/l	pH							
		STD	0000	-0021	3393	2727	0008091	0000	14468	774													
138		OBS	0000	-0021	33927	2727			14468	774	140			007	197	075	793						
		STD	0010	-0024	3392	2727	0008121	0008	14469	774													
138		OBS	0010	-0024	33921	2727			14469	774	142			005	192	075	799						
		STD	0020	-0072	3407	2741	0006781	0016	14450	734													
		STD	0030	-0111	3419	2752	0005718	0022	14435	702													
		STD	0050	-0167	3437	2768	0004190	0032	14415	658													
138		OBS	0050	-0167	34366	2768			14415	658	211			009	277	085	778						
		STD	0075	-0171	3438	2769	0004058	0042	14417	663													
156		OBS	0096	-0174	34428	2773			14420	667	190			007	296	086	774						
		STD	0100	-0165	3444	2774	0003608	0052	14425	645													
138		OBS	0100	-0165	34439	2774			14425	645	212			008	289	086	774						
		STD	0125	-0108	3446	2774	0003625	0061	14456	600													
		STD	0150	-0064	3449	2775	0003568	0070	14481	562													
156		OBS	0197	-0022	34591	2781			14510	504	206			003	313	103	768						
		STD	0200	-0021	3460	2781	0002935	0086	14511	501													
138		OBS	0200	-0021	34599	2781			14511	501	225			007	325	104	768						
		STD	0250	0024	3457	2785	0002643	0100	14541	465													
156		OBS	0298	0055	34692	2785			14563	430	224			001	331	118	764						
		STD	0300	0055	3469	2785	0002671	0113	14563	501													
138		OBS	0300		34692				501	242				005	327	115	768						
		STD	0400	0052	3470	2786	0002600	0139	14579	465													
156		OBS	0499	0048	34701	2786			14593	442	230			001	331	124	764						
		STD	0500	0048	3470	2786	0002574	0165	14594	442													
		STD	0600	0043	3470	2786	0002584	0191	14608	437													
		STD	0700	0038	3469	2786	0002593	0217	14622	432													
156		OBS	0701	0038	34691	2786			14622	432	216			019	333	124	768						
		STD	0800	0033	3469	2786	0002576	0243	14637	433													
		STD	0900	0028	3469	2786	0002549	0269	14651	433													
		STD	1000	0023	3469	2786	0002528	0294	14666	434													
		STD	1100	0018	3468	2786	0002504	0319	14680	434													
		STD	1200	0013	3468	2786	0002478	0344	14695	435													
156		OBS	T1205	0013	34682	2786			14696	435	217			001	322	126	771						
		STD	1300	0009	3469	2787	0002418	0368	14710	454													
		STD	1400	0006	3469	2787	0002368	0392	14726	471													
		STD	1500	0002	3469	2788	0002307	0416	14741	486													
156		OBS	T1712	-0005	34698	2789			14774	509	225			000	320	124	770						
		STD	1750	-0006	3470	2788	0002185	0472	14780	510													
		STD	2000	-0014	3469	2788	0002172	0526	14819	515													
156		OBS	T2222	-0020	34675	2787			14854	519	229			006	320	125	770						







532-AA

Woods Hole Oceanographic Institution  
ATLAS - UNZITEEN COLLECTION

